

THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation
INCORPORATING

Railway Engineer • TRANSPORT • The Railway News

The Railway Times • Herapath's Railway Journal • RAILWAY RECORD.

RAILWAYS ILLUSTRATED • ESTABLISHED 1835 • RAILWAY OFFICIAL GAZETTE

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1.
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Annual subscription £4 10s. 0d. post free. Single copies, Two shillings
Registered at the G.P.O. as a newspaper Entered as second-class matter in U.S.A.

Vol. 96]

FRIDAY, FEBRUARY 15, 1952

[No. 7

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Effects of Steel Shortage

THE reduced steel allocation has already begun to affect British Railways rolling stock building programme. In our issue of February 1, we recorded a statement by Mr. John Elliot, the Chairman of the Railway Executive, that much of the Government allocation of steel to the railways would be devoted to track maintenance and that if the present reductions in allocations were implemented, the result for British Railways would be serious; and we expressed our fear that the railways would be affected most in the construction and maintenance, of locomotives and rolling stock, and especially in the building of passenger coaches. Very soon afterwards it was reported that over 100 men—the number has since been increased, as recorded on other pages this week—had been declared redundant at Derby Carriage & Wagon Works. Construction of new passenger coaches at Derby has been stopped, and the building of all-steel wagons, already reduced from 50 to 25 a week, is being cut by 10 per cent.; more emphasis is to be put on repair work. It was also stated that over-

time in Derby Carriage & Wagon Works was stopped at the end of last year, and the men had been working only a 44-hr. week. The rolling stock programme provided for the building in 1951 of 836 standard passenger vehicles in British Railways workshops, with another 350 supplied by carriage building firms; of the 836, some 325 were to be built at Derby, and the rest divided between five other works. No cessation of building new coaches is reported from other places, but what has been necessary at Derby may have to be done elsewhere. Derby Locomotive Works are not affected. The necessity to discontinue passenger vehicle construction is regrettable. To restrict building of freight vehicles is another matter, in view of rearmament and the general industrial effort now being made. Any reduction in wagon building must have a serious effect as the defence programme gets under way, more especially because of the rate of vehicle condemnation in recent years. Unless some alleviation of the railway steel position can be achieved shortly, the results may be felt over a wide range of industries for a long time. There is the further point that although it is hoped to absorb redundant skilled staff at Derby in other suitable railway employment, the question arises of possible permanent loss of skilled labour to the railways.

B.T.C. Entertainment Expenses

TWICE within a few days, on February 4 and 11, the Minister of Transport, Mr. J. S. MacLay, has stated in answer to questions in the House of Commons that the total entertainment allowance for Members both of the British Transport Commission and of its Executives was £4,000 a year. In fact, this sum is for the Chairman and Members of the Commission only, and it is stated that the Chairmen and Members of the Executives receive their entertainment expenses as managerial expenses in the usual way. The mistake apparently arises from ambiguity in the regulations, in which it is not clear whether the term "Commission as a whole" embraces the Executives, in an answer to a question in Parliament in December, 1949—apparently the earliest published statement on this matter—and in a White Paper issued in December, 1951. Compared with the generous allowances for the National Coal Board shown in the White Paper, £4,000 a year for the B.T.C. without its Executives, bearing in mind that the maximum establishment of the Commission provides for a Chairman and eight Members, is not extravagant; it would be a very small allowance for the 40-odd members of Commission and Executives combined. Colour was lent to Mr. MacLay's answers by his statement that of the £4,000, only £2,231 was spent in 1950. The B.T.C. Report for that year shows that the entertainment expenses of the Commission were only £223, and those of Members of Executives £2,008—a modest outlay in view of the responsibilities involved.

Freight Traffic Movement

WITH the winter three-quarters over there is cause for satisfaction at the freedom of movement in British Railways freight traffic. No serious difficulty in handling the traffic offering has been reported so far, and there are no restrictions on the acceptance of traffic in any area, despite the recent cold spell. Apart from the basic fact of a relatively mild winter, this is largely the result of careful planning at all levels, voluntary working at weekends by railwaymen over a long period, the absence of epidemics, and the co-operation of traders and others in clearing wagons. Any slight reductions in recent tonnages have not been due to inability to convey the traffic. The number of wagons on hand in South Wales for destinations in England last week was 2,900, which represents a normal position. The number of trains run daily from South Wales to England varies between 95 and 100, representing an average daily wagon movement of just under 5,000 wagons. In some cases, as in the coal cleared from pitheads last week, of which details are given elsewhere in this issue, the latest figures show increases. The railway staff situation is

still serious, particularly in operating grades. This doubtless has justified the curtailment of passenger services, still only in its first phase, so as to provide crews for goods trains.

Claims Prevention Measures

MERCHANDISE lost or damaged in transit in 1951 cost British Railways more than £3,000,000. But to view this problem in its right perspective one must first have a true appreciation of the amount of business handled in a year. Excluding coal traffic the total tonnage conveyed by goods train in 1951 was 115,000,000 and packages carried by goods and passenger train totalled 2½ thousand million. This means that out of every 10,000 packages received and forwarded by British Railways 99·93 per cent. are delivered safely. Something like half the total claims related to loss and pilferage. Mr. T. E. Jackson, Assistant (Claims) to the Commercial Superintendent, London Midland Region, recently read a paper to the Industrial Transport Association describing the steps taken by British Railways to reduce this wastage, steps which have resulted in the loss being reduced from £4,000,000 in 1948. Closest collaboration with the B.T.C. police force and the help of all grades of railwaymen have made this possible. Measures are being taken also to reduce claims for damage, including collaboration with traders regarding packaging, safety loading devices, greater use of shock absorbing vehicles, and so on.

Southern Region Punctuality

PASSENGER train timekeeping on the Southern Region of British Railways during the four weeks ended December 1, 1951, was the best for November since the war. The punctuality of electric trains improved by 0·45 min. to an average late arrival of only 1·13 min. over the corresponding period of the previous year, and steam train timekeeping was slightly better with a 1·23 min. late arrival. Mr. S. W. Smart, Superintendent of Operation, commenting on these results in the Southern Region edition of *British Railways Magazine*, states that timekeeping was consistently good throughout the four-week period; the worst day's average was 1·54 min. on Monday, November 26, and the best was 0·94 min., recorded on November 14, 15 and 29. Working was helped by freedom from fog. Though freight train timekeeping deteriorated by 0·9 min. to 4·9 min. late, it was still of a high standard. Results for the period compared with those of previous years are shown below:—

AVERAGE MINUTES LATE ARRIVAL (WEEKDAYS)

	Four Weeks Ended							
	1945	1946	1947	1948	1949	1950	1951	
	Dec. 29	Nov. 30	Nov. 29	Nov. 27	Dec. 3	Dec. 2	Dec. 1	
Steam ...	8·06	2·36	2·32	1·55	1·88	1·31	1·23	
Electric ...	4·97	1·93	2·42	2·09	2·36	1·58	1·13	
Freight ...	25·6	9·8	9·3	5·0	5·3	4·0	4·9	

Films for Permanent Way Staff

THE contribution towards overcoming the present shortage of permanent way staff which can be made by making conditions of work on the permanent way more attractive, as well as by the more direct method of encouraging recruitment, has been stressed on several occasions in recent months. Mechanisation both speeds up maintenance and makes work more attractive, and was the subject of a recent series of articles in this journal. So that the permanent way staff can get the best use from the modern equipment available, the Railway Executive has arranged with the British Transport Commission Films Section for the production of a series of instructional films on various aspects of permanent way work. The first five of these films have been completed, and were recently shown to a small audience at Film House, Wardour Street, W.1. Each of the films shown, further details of which are given elsewhere in this issue, was an exceptionally good example of the technical documentary film, and clear photography

is combined with a lucid commentary. The films have very high instructional value, and it is desirable that they should have as wide a circulation as possible.

Pre-stressed Concrete Transmission Portals

FOR supporting the 1,500-V. d.c. overhead conductor wires, an economical pre-stressed concrete type of portal is now being used on the Netherlands Railways. The flanges of the tapered masts contain the pre-stressed wires, and there is a diagonal web bracing spot-welded in position and with a cage of unstressed reinforcement. The masts rest on pre-cast concrete block foundations having a square base and conical upper portion. Where the soil is unstable, the pair of blocks under a portal is connected beneath the track by old rails as ties. The work train used for erecting the portals includes a crane with special balance-rollers so that the adjacent track is not fouled when the jib is working over the cess. An intermittent track is laid over a whole series of flat wagons in the train, which, however, can be made continuous by connecting up lengths of rail over the buffers. The foundation blocks loaded on the wagons are jacked up on to a small trolley and run along this track to the crane, which deposits them in previously-dug holes.

Cafeteria on Wheels

A NEW type of self-service of refreshments on trains is under trial on the Pennsylvania Railroad, U.S.A., in the express service between New York, Philadelphia, and Washington. At the end of one coach, displacing only ten passenger seats, equipment has been installed to dispense hot and cold drinks from coin-operated automatic machines. On one side of the aisle are three machines, each about 5 ft. high; one serves hot coffee, the second cold milk, orangeade, and other soft drinks, and the third sandwiches. On the other side, there is a single machine dispensing cake, doughnuts, sweets, and ice cream. A change machine also is provided. Signs are displayed at the end of each coach in the train directing passengers to the cafeteria, and a pamphlet describing the equipment and listing what can be obtained from it, is placed on each seat before the journey begins. If the response is good, the new service is to be expanded, possibly with more sets of equipment than one on the longer trains. We believe that something of the kind has been tried in Britain, without much success, but as an economic form of refreshment service the plan might well be reconsidered.

Other Uses for Train-Heating Boilers

AUTOMATICALLY-controlled oil-fired boilers, which have been developed in the United States to provide steam-heat for diesel-hauled trains, have attained such a degree of efficiency and reliability that new uses are being found for them. Recently the Norfolk Southern Railway has replaced two conventional hand-fired steam boilers in its shops by four of these generators. The first two are saving \$1,000 a month and the others are expected to save their purchase and installation cost in a year. At both plants, one man is occupied for 30 min. at the beginning of the working day to start, check, and blow-down each pair of generators, after which the automatic control takes over; as a result several men have been transferred from boiler attendance to other work. At the Carolina Junction shops each generator can supply nearly 5,000 lb. of steam per hr. at 150 lb. per sq. in. The steam is used to supply steam hammers, steam locomotive blowers, steam for cleaning guns and tanks of various kinds, and for office and car heating. The generators are one-fifth the size of the previous boilers; they are more economical, as their oil consumption is regulated automatically by the steam demand, and their insurance costs are lower than those of ordinary boilers.

Oil-Burning Locomotives for East Africa

SIXTEEN "29" class 2-8-2 locomotives have been completed by the North British Locomotive Co. Ltd. for the East African Railways & Harbours. The engines have been built to the 3 ft. 3½ in. gauge, but are so designed that they can be converted to the 3 ft. 6 in. gauge should it subsequently be desired. The firebox is of Belpaire design with a steel inner box of all-welded construction. Firebox, roof and waterspace stays are of Dunic steel and flexible stays are provided in the breaking zones. The locomotives are arranged for oil burning, with two burners at the front of the firebox and the design is such that the engines can be converted to burn solid fuel. The main frames are machined from rolled slab to a thickness of 4 in. and British Timken roller-bearing axleboxes are fitted to all axles on both the locomotive and tender. The coupled axleboxes are of the cannon type and all tender and carrying wheels and axles, complete with roller bearings, are interchangeable as a unit between leading and trailing truck and tender bogies. Further details are given elsewhere in this issue.

Reducing the Weight of Locomotives

THE hollow boring of locomotive axles and crank pins provides a means for reducing the weight of these parts and at the same time facilitates any heat treatment required after forging. This method of manufacture is the subject of an illustrated article elsewhere in this issue, in the course of which the author illustrates by examples the advantages possible by boring out the centres of axles and crank pins. The weight savings are considerable if axles and pins are of a uniform diameter. The use of special steels in locomotive construction requires special heat treatment, which is assisted by hollow boring, because the thickness of the metal to be penetrated is thereby reduced. In practice the dimensions of axles and crank pins will be a deciding factor. In the case of large and powerful locomotives where high boiler capacity calls for the provision of a large boiler of considerable weight, savings in the weight of other parts frequently assume importance, thus making it necessary to refine the design of other components, and of these engine axles especially and tender axles offer opportunity for weight saving.

Subsidised Airway Competition

ON more than one occasion we have drawn attention to the fact that there is remarkably little liaison between the various British nationalised industries. In many cases they tend to work one against the other. So far as the railways are concerned, for example, one of the principal factors contributing to their present difficulties has been the higher prices charged by the Coal Board for coal and the inferior quality of the product supplied. On other matters, also, such as wages and pensions, not only has there been no common policy, but there has not been even reasonable consultation or appreciation of the effect on other State-owned industries of action taken by one of them.

In the case of the State-owned British European Airways Corporation, however, even more serious considerations arise in relation to the British Transport Commission. From a study of the last issued B.E.A. report and accounts, those relating to the year ended March 31, 1951, it is clear that many of the services provided are not only directly competitive with those of the railways, but that the airline operations are being subsidised. This not only involves a loss to the taxpayer through the Exchequer grant made to the air corporation, but makes necessary higher charges to traders generally by reason of the British Transport Commission's need to compete for passenger traffics at fares which are lower than would obtain but for the air subsidy.

The total traffic revenue to March, 1951, amounted to £8,998,821 which included £962,482 for mail. The total operating costs were £9,796,079, giving a "route" loss of £797,258. To this must be added the losses of sub-

sidary companies, and other charges, giving a total loss for the year of almost £1,000,000 which was the amount of the Exchequer subsidy for the year.

It is the figure of total route loss which bears a little more investigation. The services provided by B.E.A. may be divided broadly into two sections—continental services and internal services (charter and ambulance operation brought in a profit of £2,942 and commissions and incidental revenue totalled £324,140). The internal services which include the Scottish, Channel Islands, English, Irish Sea and Northern Irish, and freighter services, on all of which B.E.A. is directly competitive with British Railways, brought in a total traffic revenue of £1,719,230. The operating costs were £2,780,938 and the "route loss" alone was thus £1,061,708. That is to say, the services on these routes were provided at less than two thirds of the operating cost (i.e., before other losses and charges).

Of the Continental services, a route loss of no less than £272,763 was made on the short cross-channel services where the traffic revenue was £1,416,885. These are very largely to Paris and similar destinations and, again, are directly competitive with what used to be some of the most remunerative services provided by the railways. Northern and Central European services of B.E.A. resulted, by contrast, in a profit of £150,267 and the Southern European and Mediterranean services a profit of £136,132. Thus the Exchequer Subsidy of £1,000,000 plus the profits on the long-distance European services were used to cut prices on the competitive short cross-channel and internal routes of British Railways.

There is no control over the charges made by airways lines, except insofar as this is arranged between airline operators. There is nothing to prevent an air operator quoting a special price for a particular service either on a specified route or at a particular time, or in any other way that may suit his convenience and economy. This is in marked contrast with the procedure which has to be adopted by the British Transport Commission in any variation which it desires to make in its railway charges.

Central Transport Consultative Committee

CRITICISM of the failure to consult transport users before British Road Services rates were increased by 10 per cent. in January of last year is made in the report* for 1951 of the Central Transport Consultative Committee, of which Major Egbert Cadbury is Chairman. This, however, was an isolated case, and the report stresses the closeness of the present contacts between users and the Road Haulage Executive. It points out that the draft regulations for classification and charging of traffic under the proposed British Transport Commission merchandise charges scheme were widely circulated among traders and others, and it acknowledges the comprehensiveness of the recent protracted hearing of the Passenger Charges Scheme 1951 before the Transport Tribunal.

The concern felt by the committee at the railway freight traffic situation obtaining last summer and at the prospects, as they then appeared, for the winter of 1951-52, are described. The steps taken by the Central Transport Consultative Committee to remedy the situation included an approach to the Minister of Transport, recommending deferment of railwaymen and measures to make railway work more attractive; deferment has not proved practicable, and the steps to increase recruiting for the railways have been described in this journal from time to time. The report is not in favour of abolishing travel concessions to railwaymen.

The closing of unremunerative branch lines and withdrawal of passenger train services were fully considered by the committee. Aspects studied included passenger fares, simplification of operation by means of simplified signalling and use of railcars or push-and-pull units, and passenger rail/road terminals. The committee felt unable to make any recommendation on the reduction of standard

* Central Transport Consultative Committee for Great Britain: Annual Report for the year ended December 31, 1951. H.M. Stationery Office. Price 6d.

single fares. It did not favour development of branch termini as railheads for passenger road services where existing bus services made it unlikely that such an arrangement would pay. The attitude towards passenger area schemes is cautious. The hardship suffered by farmers and other users of a line closed was felt to be inevitable. The line was unremunerative because "it was no longer used by those for whom it was provided." The committee hoped, however, that the Commission would find some means of easing the burden of proved hardship, "even if this had to be of a temporary character." "We are satisfied" states the report "that the Commission fully realise the need to obtain the best result from the assets they own . . . It is necessary to employ all available means of persuading users to make the choice (of the means of transport) which is in the general interest, but any degree of compulsion . . . would be condemned as being contrary to the freedom of choice which the Act of 1947 has specifically preserved."

Coras Iompair Eireann

THE first annual report of Coras Iompair Eireann (Irish Transport Company), of which Mr. T. C. Courtney is Chairman, covers the period from June 1, 1950, to March 31, 1951. The undertaking is a statutory body set up under the Transport Act, 1950 (of the Republic of Ireland), which became law on May 17, 1950, to absorb Coras Iompair Eireann (1945) and the Grand Canal Company.

The report opens with a survey of the recent development of transport in the Republic, leading to the establishment of Coras Iompair Eireann and continues with a statement on the present situation of the Board, in which it is shown that the uneconomic operation of its railways must inevitably continue unless they can regain much traffic lost to private road hauliers.

For the year ended December 31, 1949, (its last full year of operation) Coras Iompair Eireann (1945) incurred a loss of £1,205,746, and for the five months January 1-May 31, 1950, a loss of £746,854. The total overall loss of Coras Iompair Eireann in the ten-month period covered by the report was £657,092, of which it is estimated that some £400,000 resulted from a six-weeks strike in December, 1950-January, 1951. On railway working there was a loss of £949,037, and on road freight working a loss of £29,909. The bus services have been a financial success and made a profit of £355,760. Although the volume of transportable goods increased by over 60 per cent. between 1936 and 1950, and the volume of imports by about 35 per cent., the tonnage carried by C.I.E. road and rail service increased by only 9 per cent.

Some of the principal figures are given in the following table, but because of the disparity in the accounting periods comparison with previous results is not possible. (Figures of C.I.E. (1945) for 1949, and for the first five months of 1950 were published in our issues of March 10, and August 11, 1950, respectively):—

Railways—		£
Passenger traffic receipts	...	1,562,762
Goods traffic receipts	...	2,641,051
Miscellaneous receipts	...	30,638
Total receipts	...	4,234,451
Expenditure	...	5,183,488
Loss	...	949,037
Road Passenger—		
Receipts	...	3,383,070
Expenditure	...	3,027,310
Profit	...	355,760
Road Haulage—		
Receipts	...	920,126
Expenditure	...	950,035
Loss	...	29,909
Canals, loss	...	29,219
Docks and Harbours, loss	...	10,862
Total loss	...	657,092

The through Belfast-Cork "Enterprise" service operated in conjunction with the Great Northern Railway (Ireland), and the "Radio Train" have been well patronised; in the 1950 season the "Radio Train" earned £20,650. Six new coaches, the first since 1937 and part of an order for 117 new coaches being built at an estimated cost of £895,000, were introduced. About 160 new goods vehicles went into service. An order was placed for 60 broad-gauge and 4

narrow gauge railcars, at a total cost of £1,042,500. Experiments into the possibility of using turf as a locomotive fuel were conducted.

Improvements were carried out to hotels and restaurants, and train catering services were extended. Demands were made by all grades for increased pay and improved conditions, and it is estimated that the increases agreed to for all staffs will cost an additional £680,000 in a full year. The undertaking continued to effect economies and devise cheaper methods of operation. To provide data on the economies of branch line working, similar services at equal charges on road and rail were provided to Ballinrobe.

Increased facilities of all types are being made available to traders. To offset considerable increases in the cost of materials, charges were increased in September, 1951, by 12½ per cent. in fares and 16½ per cent. in freight rates. It was decided to adopt as standard for main lines a new 92 lb. flat-bottom rail in place of the 90 lb. bulkhead type; there will be a saving in renewal and maintenance.

British Transport Commission Traffic Receipts

THE advance figures for the first four-week period of 1952 show some 90 per cent. of the total receipts of the British Transport Commission from its carrying activities during the period. Commencing with Period 1 of this year, these figures now include British Road Services receipts, about 14 per cent. of the total; they do not show receipts from British Railways C. & D. and other road services, from ships, or from docks, which together account for only 10 per cent. of total traffic receipts. Traffic receipts shown for Period 1 are £5,193,000, or 14·5 per cent., up on the corresponding period of last year.

British Railways passenger earnings exceeded last year's figure by 8 per cent., for which there is no explanation pending analysis by categories appearing in due course. Merchandise and livestock receipts were only 15 per cent. up, despite two rate increases of 10 per cent. each, on April 16 and on December 31, 1951; this means a drop in traffic compared with last year, which is in accord with the trend during the last few weeks. Mineral receipts are 27 per cent. up, and coal nearly 23 per cent. up, which represents slight increases in tonnages in view of the two advances in rates. British Railways traffic receipts, excluding C. & D. and so on, were £3,912,000 over corresponding earnings in 1951.

	Four weeks to January 27		Incr. or decr.
	1952	1951	
	£000	£000	£000
British Railways—			
Passengers	6,063	5,597	+ 466
Parcels, etc., by passenger train	2,443	2,221	+ 222
Merchandise & livestock	7,892	6,836	+ 1,056
Minerals	3,273	2,582	+ 691
Coal & coke	7,920	5,443	+ 1,477
	27,591	23,679	+ 3,912
British Road Services	5,760	5,053	+ 707
Road Passenger Transport, Provincial & Scottish—			
Buses, coaches & trolley-buses	2,925	2,587	+ 338
London Transport—			
Railways	1,221	1,199	+ 22
Buses & coaches	2,518	2,275	+ 243
Trolleybuses & trams	666	740	— 74
	4,405	4,214	+ 191
Inland Waterways—			
Tolls	80	56	+ 24
Freight charges, etc.	80	59	+ 21
	160	115	+ 45
Total...	40,841	35,648	+ 5,193

Road haulage receipts exceeded those for Period 1 of last year by £707,000, or 14 per cent., because of increases

in rates on January 29 and April 23, 1951, and of some acquisitions of undertakings before such acquisition was suspended after the present Government took office.

London Transport receipts afford a true comparison with last year. Railway receipts are almost the same. The slight rise in bus and coach receipts more than offsets the fall in trolleybuses and trams due to abandonment of the latter, and substitution by buses. London Transport contributed £191,000 of the excess in receipts over the corresponding period of 1951. The provincial and Scottish bus undertakings of the Commission during Period 1 produced a revenue £338,000, or 14 per cent., up on last year, largely accounted for by alterations in fares authorised from time to time.

PERCENTAGE VARIATION 1952 COMPARED WITH 1951

	4 weeks to January 27
British Railways—	
Passengers	+ 8.3
Parcels	+ 9.9
Merchandise & livestock	+ 15.4
Minerals	+ 26.7
Coal & coke	+ 22.9
Total	+ 16.5
British Road Services	+ 13.9
Road Passenger Transport	+ 13.0
London Transport—	
Railways	+ 1.8
Buses & coaches	+ 10.6
Trolleybuses & trams	- 10.0
Total	+ 4.5
Inland Waterways	+ 39.1
Aggregate	+ 14.5

U.S.A. Railways in 1951

THE annual review and outlook number of *Railway Age* was published on January 14. As usual, Dr. J. H. Parmelee, Vice-President, Association of American Railroads, contributed a survey of railway operations in 1951, which he calls a year "of solemn purpose and sober thought." The Korean war and intensified defence programme threw a heavy strain on the railway companies. Upward traffic trends, which started in the middle of 1950, continued through last year. Shortages of steel and other essential materials hampered the railways in improving their properties and extending their equipment. At the same time their financial resources were weakened because increased costs of labour and supplies were not offset by adequate advances in rates and charges. The U.S.A. railway position is thus similar in some respects to the state of affairs on British Railways, but, despite all obstacles, distinct progress was made in operating efficiency.

Table 1 compares the volume of traffic for 1951 and 1950, showing substantial increases in both freight and passenger business.

TABLE 1—VOLUME OF TRAFFIC

	1951	1950	Increase per cent.
Wagon loadings (thousands) ...	40,497	38,903	4.1
Net ton-miles (millions) ...	643,400	588,578	9.3
Passenger-miles (millions) ...	34,400	31,760	8.3

In 1951, more wagons were forwarded with all classes of bulk commodities. No fewer than 3,004,000 wagons were loaded with iron ore, 475,000 more than in 1950 (18.8 per cent.). The increase would have been larger, if cold weather at the end of October had not stopped shipments on the Great Lakes for a week. The movement of 2,000,000 tons was lost for the season, but the combined ore movement from the Northwest by lake and all-rail routes reached the record total of 94½ million tons.

Dr. Parmelee does not comment on the decrease of 403,000, or 9.4 per cent., in the number of wagons loaded with "smalls." In 1929 the number of such wagons was 13,206,000, equal to 25 per cent. of that year's total loadings. Last year it was 3,866,000, or 9.5 per cent. of the total. The time may be near when the railways will cease to cater for this traffic by freight train, for it loads lightly and is expensive to handle.

Ton-mileage was greater than in any of the six years since the war, except 1947. The post-war decline in passenger carryings was halted, but the improvement was due largely to travel on Government service.

Table 2 shows an increase under each head of operating revenue, except "express" which remained the same.

TABLE 2—FINANCIAL RESULTS

Revenue	1951 (\$ millions)	1950 (\$ millions)	Increase per cent.
Freight	8,617	7,817	10.2
Passenger	895	813	10.0
Mail	323	267	21.0
Express	82	82	—
All others	438	387	13.1
Total	10,355	9,366	10.5

The increase of \$989 million in operating revenues was wiped out by increases of \$975 million in operating expenses and of \$21 million in taxes. The rise of 13.8 per cent. in operating expenses was pretty evenly spread over maintenance of way, upkeep of equipment and transportation costs. The operating ratio advanced from 74.5 per cent. in 1950 to 77.6 per cent. and net railway operating income (earnings before charges) fell from \$1,040 million to \$903 million. This drop of fully 13 per cent. reduced the rate of return on net property investment from 4.2 per cent. in 1950 to 3.5 per cent.

The failure of larger gross revenues to maintain net earnings at the 1950 level was inopportune, at a time when railway capital expenditures reached a peak of \$1,413 million. About 75 per cent. of that record sum was spent on equipment, mainly freight wagons and diesel-electric locomotives. In finding money since the war for programmes of betterments and additions, railway working capital has been reduced to an amount sufficient barely to meet current cash outlays for one month. There would appear to be a clear case for a further increase in freight rates, which the Interstate Commerce Commission is being pressed to grant. For the first nine months of 1951, revenue per ton-mile averaged 1.324 cents, compared with 1.329 cents in 1950 and 1.339 cents in 1949. Rail transport was cheap for a period when material prices rose steadily, but would cost more in the last quarter of 1951 when the latest increase in freight rates took effect.

Table 3 compares 7 significant statistical averages for the first 9 months of 1951 with the results for the year 1950. The progress in operating efficiency is unmistakable.

TABLE 3—PROGRESS IN OPERATING EFFICIENCY

Statistical average	1951 (9 months)	1950	Increase per cent.
Net ton-miles per freight train-hour	21,720	20,344	6.7
Freight train load (short tons)	1,299	1,224	6.1
Wagon load (short tons)	32.8	31.7	3.4
Freight train speed (m.p.h.)	16.9	16.8	0.5
Daily mileage of freight locomotives	121.6	119.4	1.8
Passenger train speed (m.p.h.)	37.6	37.4	0.5
Daily mileage of passenger locomotives	245.2	237.2	3.4

Perhaps the first average is the most important. It gives the unit output per hour of freight train operation, and the additional work done is all the more remarkable because the train hours used in the calculation include train shunting hours at wayside stations, amounting to nearly 20 per cent. of the total. This statistic and one or two of the other averages were expected to set up fresh records for the whole of last year.

As to the future, Dr. Parmelee thinks that traffic levels are likely to continue high in 1952, with revenues breaking all existing records. Such a situation will not, however, mean satisfactory net earnings unless rates are adjusted to yield the railways a fair return on their net property investment. In this connection he says that "recent developments in Great Britain afford a stern warning," for "nationalisation has been no solution." He closes his admirable survey on a confident note; the U.S.A. railroad industry, he states, despite the problems confronting it, will co-operate with all parties concerned in meeting the transport requirements of the nation as they have been met in all previous emergencies.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

A Criticism of American Diesel Power

January 28

SIR,—Mr. Peter Novak's letter in your January 18 issue is very interesting. Is the truth beginning to dawn on American diesel enthusiasts? The smooth riding of passenger trains is an excellent feature of railways in England not so valued and appreciated, and wanted in the U.S.A. But is it correct to generalise from the few examples of diesel-hauled trains mentioned by Mr. Novak which did not run punctually? One swallow does not make a summer. How about a statistic on overdue trains compiled by the Association of American Railroads of Interstate Commerce Commission? The International Railway Union in Paris has published recently a statistic of this kind for the year 1950.

Yours faithfully,

KARL STEUERNAGEL

28, Basiliakstrasse, Rheine (Ems), Western Germany

Railway Carriage Design

February 2

SIR,—May I comment on the letter from Canon Fellows in your February 1 issue. I agree with him that the public will generally choose side corridor compartment stock in preference to central gangway stock—I do myself—but the reason for such preference is in the design of the seating of the central gangway stock which on British Railways is uncomfortable.

What I advocate is the American style of central gangway stock with rotating, reclining seats with adjustable footrests. In other words, something far more comfortable and convenient than any seating arrangements available in third class on British Railways. With such modern type of seating the public would be delighted.

Yours faithfully,

G. RICHARD PARKES

Montcroft, School Lane, Formby

Steam and Electric Traction

January 28

SIR,—Your paragraph under the above heading in your January 18 issue prompts me to make some observations on this subject.

First, I think it rather unfortunate that Mr. Koffman's article should have been qualified by your editorial, which may be misinterpreted in some quarters as applying to this country. It should therefore be noted that over one-third of the route mileage of British Railways carries traffic of sufficient density to justify electrification economically quite apart from the wider issues of fuel conservation and amenity.

I cannot let your last sentence referring to "the relative simplicity and ease of maintenance of the steam locomotive" pass unchallenged. The heaviest maintenance on electric locomotives and multiple-unit stock is invariably needed by its mechanical parts which are, in general, similar whatever the motive power. The electrical equipment on the other hand is capable of running for months without examination, for years without overhaul, and will genuinely outlast the life of the vehicle.

For example, I understand that the more modern Southern Region equipments are examined at three-monthly periods and that the control equipments on the Brighton express stock (put into service in 1933) have yet to receive a general overhaul. The overhaul which takes place at approximately 100,000 mile intervals is confined entirely to mechanical parts. A 40-year-old steam locomotive on the other hand usually has only the wheel centres of the original machine left. As to maintenance, I have yet to hear of the steam locomotive whose visits to a running shed are governed by

the life of the brake blocks, as is the case with Southern Region electric stock.

Proceeding to more general matters, I note with some dismay the attitude adopted by those officials of the Railway Executive who, one might think by their title, should be militant advocates of electric traction. Instead, we were told at the recent discussion at the Institute of Electrical Engineers on the Railway Electrification Report that nothing could be done for at least 30 years. Surely we can do better than this and in fact may be forced to as coal is likely to become more expensive and harder to obtain in the future.

The results of the Paris-Dijon electrification are available for all to read; the results of the British Railways policy of the strong, simple steam engine seem so far to be more often visible in the repair shop than in operating economies. In the words of Mr. C. M. Cock, "there has been talk of electrification for 30 years; it is now time for action."

Yours faithfully,

W. J. WILLIAMS

10, Rathgar Avenue, London, W.13

Metal Economy on British Railways

January 17

SIR,—I should like to invite your attention to your notes on page 565 of your November 23, 1951, issue wherein the following is reported.

"The need for tin economy during the war resulted in modifications of alloy composition and practices. In 1942, the L.N.E.R. reduced the number of its cast bronzes to two, introducing 85:5:5:5 leaded gunmetal for many components in place of 13, 10 and 7 per cent. tin bronzes. Lead-base white metal was used for some wagon, carriage and locomotive bearings in place of tin or tin/lead base alloys and intermediate tin/lead alloys instead of high tin metal, but some railways preferred to reduce white-metal lining thickness instead. These substitute alloys did not, however, prove too satisfactory."

For your information, may I add that on the East Indian Railway we have also rationalised the number of non-ferrous alloys in use to a great extent as given below, and also we are not experiencing any difficulty either with the lead-base antifriction alloys or with low tin bronzes:—

Bronzes to I.R.S.S. No. N10-49

	Percentage				Remarks
	Tin	Lead	Phosphorus	Zinc	
(a) Phosphor bronze	6-8	—	0.3-0.5	—	This has replaced pre-war I.R.S.S. No. N6-36 bronze Class I (tin—10-12)
(b) Gunmetal	5-7	Max. 1.5	—	1.5-3	This has replaced pre-war I.R.S.S. No. N6-36 bronze Class II Cl-V (tin—9-11)
(c) Leaded bronze	6-8	14-16	—	Max. 0.5	This has replaced pre-war I.R.S.S. No. N6-36 bronze Class III (tin—8-10)

Whitemetals to I.R.S.S. No. N10-49

(a) Leaded base Loco white metal	29-31	14-16	1.5-2	Re-remainder	This has replaced pre-war Cl-I and Cl-V W/metal I.R.S.S. No. N10-39 (tin—58-60 per cent.) and "BNR" type alloy of 75 per cent. tin. It is also being used in place of "G" white metal (Sn-29.5, Cu-5.5 and Zn-65 per cent.)
(b) Leaded base C. & W. whitemetal	4.5-5.5	14-16	0.75-1.25	Re-remainder	This has replaced pre-war Class III whitemetal I.R.S.S. No. N10-35 (tin—5.5-6.5 per cent.)

As a metallurgist working on Indian Railways, I am interested and would be highly obliged to know either

from you or from British Railways metallurgists more details that led you to remark that these substitutes did not prove very satisfactory.

Yours sincerely,
M. N. BHIDE

Metallurgical Laboratory,
East Indian Railway, Locomotive Works,
Kanchrapara, West Bengal, India

[The conditions existing in this country in 1942 when the railway companies had to introduce bronzes and white-metals with lower tin contents were undoubtedly not conducive to a detailed and scientific appraisal being made of the results obtained from their use. It is suggested that in some cases a failure may have been attributed to the use of a "substitute" metal whereas it was actually due to other factors (more onerous service conditions, rolling stock and track maintenance difficulties, use of lower grade oils, and so on.)—ED., R.G.]

O.E.E.C. Railway Mission to the U.S.A.

February 7

SIR,—Referring to your article entitled "American Railroad Practice" on page 68 of your January 18 issue, we notice that, under the paragraph headed "Extension of I.U.R. functions," you correctly state that the O.E.E.C. Mission to the U.S.A. suggested that the functions of the I.U.R. might be extended "to achieve a still greater degree of co-operation and standardisation," so as to improve the efficiency of the European railway system as a whole. But we notice that you add that the Report "does not formulate definite proposals for action."

We would point out that in the Report there is a complete section (par. 9.4) headed "Economics of Mechanisation" dealing fully with proposals for improving the efficiency of European railways and, in particular, suggesting the possible stages by which this could be approached. Not only does the Report give proposals for standardisation of manufacture of railway materials, but also even suggests ways in which these proposals could be implemented on an international basis. At this point the Report states (p. 30) that "such a revolutionary and far-reaching proposal is one which overlaps the field of international politics," and goes on to say that "the question as to which international body should handle this problem is one outside the competence of this Mission and recommendations for its implementation should be made by the Council of O.E.E.C."

We were also surprised to find that your article, which

is called an "Analysis of the Report," does not mention the fact that up to the present—as far as we are aware—the only copies available are of Part I (General Study & Summary of Technical Reports). It is difficult to understand how you can purport to give an analysis of a Report, the major part of which has not yet been distributed. We ourselves are still awaiting official copies of Part II which comprises the full detailed technical reports.

Yours faithfully,
W. H. STONELAKE
A. S. ROBERTSON

38, Marlborough Road, Bradford

Gospel Oak Station

January 22

SIR,—In a letter in your January 11 issue Mr. George Dow, a publicity officer of British Railways, writing on the passenger traffic at Gospel Oak and Hampstead Heath Stations, states: "Inwards traffic at Gospel Oak arises from a swimming pool nearby."

No doubt he meant that the inward passengers come to Gospel Oak to get into the pool. Though a pedant might argue that all or most of them subsequently come out again, would not Mr. Dow have conveyed his meaning as easily at no greater length by substituting "is due to" for "arises from"? This would have avoided any suggestion of gnats or damp and would at the same time have been slightly nearer that goal of pure English towards which our nationalised publicity officers constantly strive.

Yours faithfully,
J. H. P. HAWTREY

4, Millbank, London, S.W.1

Displaying Fares at Stations

January 22

SIR,—Now that another fares increase is on us, may I suggest that all stations be compelled to exhibit a current fares list? While a number already do this, it is aggravating at others (even, for example, St. Pancras) to be confronted with a list of 1937 fares to which five and then 55 per cent. increases must be added. There cannot be many commercial organisations which display to their customers a list of charges fifteen years out of date.

Yours faithfully,
B. KNOWLMAN

7, Icknield Street, Dunstable

Publications Received

Steels in Modern Industry. A Comprehensive Survey by 29 Specialist Contributors. Edited by W. E. Benbow. London: Iliffe & Sons, Ltd., Dorset House, Stamford Street, S.E.1. 8½ in. x 5½ in. 562 pp. Illustrated. Price 42s.—With steel supplies, particularly of alloy steels, unequal to the increasing demand, it is more than ever necessary to make the utmost use of available steels. This book is intended to inform engineers, designers, and draughtsmen what steels are best used in various engineering applications, what are their general and special properties and characteristics, and how they may be surface-finished for anti-corrosive and other purposes. It was planned by a committee of engineers and metallurgists headed by Dr. H. J. Gough, President of the Institution of Mechanical Engineers in 1949-50, who contributes the foreword. An introductory section deals briefly with the basic metallurgy of steel, and there are 25 sections written by specialists, on the properties of

steels, their treatment, and applications. There is a full subject index and selected bibliographies give references to further reading on the treatment and usage of steels.

Morganite Oil Retaining Bearings.—A bearing designed to reduce failures and expensive lubrication is described in a technical brochure No. SO 40 issued by the Morgan Crucible Co. Ltd. Known as Reservoir, this bearing is manufactured by powder metallurgy methods from carefully selected bronze or iron powders. Its application is illustrated by diagrams, together with a description of its method of fitting, sizes, and limits. A chart showing recommended bearing practice is also included. The firm has also issued a catalogue (No. SO 41) giving in tabulated form the dimensions of the bushes and reference numbers.

Adhesives for Packaging.—During recent years increasing attention has been paid by the railways and by industry in general to the importance of efficient packaging as a means of pro-

viding freedom from pilfering and damage in transit, and the purpose of this booklet issued by Samuel Jones & Co. Ltd., New Bridge Street, London, E.C.4, is to present a brief description of the more important adhesive materials made by this firm, together with a guide in the choice of the most suitable grade for any particular purpose. The first section of the booklet contains a list of trades, with recommendations as to the use of various gummed tapes, and then follows a list of the adhesives and their properties.

Inclusive Tours in Great Britain and Ireland 1952.—The whole of the British Isles and the Channel Islands are covered by the inclusive tours programme of Thos. Cook & Son, Ltd. This comprises holidays at individual resorts, combined holidays, and motor-coach tours. The combined holidays give good opportunities of seeing something of the most beautiful and interesting places in a limited time, and should appeal specially to visitors from overseas.

THE SCRAP HEAP

Pacification

The connection for Leeds had gone out 90 min. before. For six passengers from the belated Aberdeen-Kings Cross express it meant a 3-hr. wait on York Station, or so they thought.

Then someone came up and said: "A train has been put on for you." A few minutes later the special—a single first class coach and a Pacifist-type locomotive was off to Leeds.—*From the "News Chronicle."*

Warm Praise

A lady passenger has written to the Eastern Region: "Just a word of praise for the comfort of your waiting rooms at Ipswich Station. I was travelling in the fog when it was very cold and frosty, too, and you cannot imagine my pleasure at finding such a warm and comfortable ladies' waiting room, with a most cheerful fire. Also an attendant who was polite and pleasant and really looking after the rooms well; everything was spotlessly clean."

Model of Gas-Turbine Locomotive

The model illustrated below of British Railways, Western Region, 3,000-h.p. gas-turbine locomotive No. 18100, and two 10-mm. scale models of the same engine, were made for the builders, the Metropolitan-Vickers Electrical Co. Ltd., by Mr. H. Clarkson, of York. The scale is $\frac{1}{2}$ in. to 1 ft. $2\frac{1}{2}$ in. rail gauge, and the model shown is $33\frac{1}{8}$ in. long, $6\frac{7}{8}$ in. high and $4\frac{1}{2}$ in. wide. It took 1,600 hr. to complete, of which 600 hr. were spent on the bogies alone.

The bogies are complete with dummy motors and air trunks and correct type of springing; each bogie differs from side to side and has four air brake cylinders each operating on $1\frac{1}{2}$ -in. wheels on a caliper system.

Originally this model was built for the Festival of Britain and was on show in the travelling exhibition. It was painted works grey at that time, but has since been repainted in standard British Rail-

ways colours. It is now housed in a glass case and is to be shown at a forthcoming exhibition in Cape Town.

One of the other two models is to be shown permanently in the Museum at Sydney, Australia.

Prompt Unloading Needed—1888

A copy of a circular by the General Manager of the G.N.R., Mr. (later Sir) Henry Oakley, dated October 6, 1888, is sent by Mr. J. W. Dedman, District Operating Superintendent, Cambridge, Eastern Region.

The circular is marked "important" and reads:—

"There is now urgent demand for wagons for goods and coal traffic, and every attention must therefore be given . . . so that the Inspectors will not have to report unnecessary delay to rolling stock. *Consignees must be urged to unload promptly.*

"Return foreign wagons and sheets must be used for loading in a homeward direction as much as possible, care being taken that Clearing House Rules are observed. Stations receiving loaded foreign wagons must unload promptly, and forward to the parent line to avoid demurrage."

It is interesting to think, states Mr. Dedman, that even in 1888 it was necessary for there to be a purge of wagons and sheets.

The Season Ticket

Season-ticket holders are supposed to have originated with a business man who succeeded in obtaining a concession from the Hull and Selby line which permitted him to travel up and down as often as he found necessary by paying one fare a day. The reduction of the passenger duty in 1883 recognised the growing importance of suburban traffic. In that year, Parliament annoyed the companies by imposing on them new requirements in relation to workmen's trains, as well as putting into legal shape the Chancellor of the Ex-

chequer's concession in regard to fares not exceeding one penny per mile. The institution of season tickets brought with it suburban residents by the hundreds of thousands. As early as the 1870's passengers from Brighton were going up daily to business in London. Earlier still, in the 1860's, there was much discussion of season tickets as they affected residents outside the great towns and of the importance of living on a line with a good reputation for punctuality.—*From "The Manchester Guardian."*

Fellow Travellers

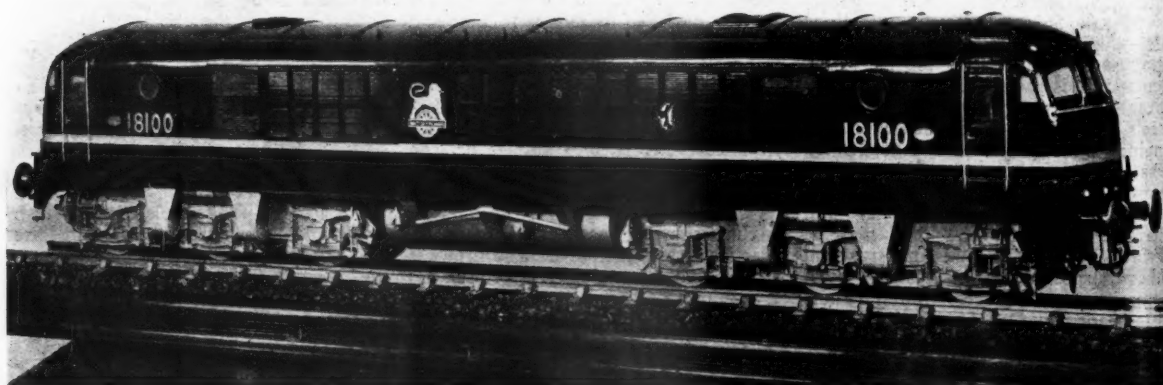
Someone (whose name I cannot trace) Said he disliked the human race, Especially its silly face. If he had lived today He would have had good cause to bind, For, surely, one could hardly find Worse specimens of human-kind Than those who go my way.

The pest, whom everybody knows, Who has a bad code id 'is dose And sniffs and dances on my toes All the way up to Town; The ladies, with more width than wit, Who bulge (you'd hardly call it "sit") And stick their elbows out and knit— All cause me many a frown.

The man who wants the window shut In summertime—the silly mutt Who lets it down when north winds cut One's marrow bones in half. Then there's my morning vis-à-vis, Sir Acid-drop Acerbity, Who peers disgustedly at me Over his "Telegraph."

The passenger who slams the door. The shoppers, travelling after four— There must be many, many more With whom I disagree; And, yet, they have their points of view And, sometimes, between me and you, I think t'would shock me if I knew Just what they think of me!

A. B.



Model of Western Region gas-turbine locomotive No. 18100, made for the Metropolitan-Vickers Electrical Co. Ltd., by Mr. H. C. Clarkson

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

PAKISTAN

Diesels on Harnai Section

Diesel locomotives are to be used on the Harnai Section of the North Western Railway, between Sibi and Khosht, 83 miles.

VICTORIA

Improved Pantograph

A lighter and more economical pantograph is being used on the Melbourne electrified suburban system. After successful trials with a modern, lightweight, single-pan pantograph the railways ordered a further 25, which are being installed on suburban motor coaches. Seventeen are in service.

The single-pan type of pantograph is much lighter than the double pan and exerts much less pressure between the strips and the overhead wire. The single-pan pantograph, because it is lighter, keeps satisfactory contact with the overhead wire with reduced upward pressure.

SOUTH AFRICA

Doubling the Natal Main Line

The Natal main line is being doubled between Boughton and Umbulwana at a cost of some £7,000,000. The Tweede-Lions River (3 miles) and Dargle-Lidgetton (2 miles) sections have been completed, and work is progressing on the following sections: Nottingham Road-Rosetta (3 miles); Rosetta-Mooi River (10 miles), and Estcourt-Ennersdale (8 miles).

When the whole scheme is completed there will be a saving of about 13½ miles

between Umbulwana and Boughton (121 miles). Curvature will be reduced and new deviations will have much flatter curves than those of the existing line. Some stations may be eliminated. Improvements on the Mooi River-Estcourt section may include a new double-track tunnel over two miles long to replace the existing Stockton tunnel.

The shortening of the route, elimination of sharp curves, and electrification will enable all trains to be considerably accelerated. Estcourt Station is to be reconstructed at a cost of some £400,000.

Traffic on the Natal main line has greatly increased in eighteen years. The tonnage north of Pietermaritzburg in 1933 was 1,800,712; last year it was 5,281,339.

CANADA

Freight Rates

Freight rates have been lowered for a variety of articles moving between the east and the interior west. The greatest reductions—which were the subject of controversy before the Royal Commission on Transportation and at the last session of Parliament—are almost 100 per cent. and will benefit Alberta chiefly.

The new rates were put into effect by the railways under the "one and one-third rule" adopted by Parliament last year. The rule gives the interior west a share in the low transcontinental rates between the east and the British Columbia coast, which have been depressed by water competition. The legislation, the result of a long fight by the Alberta government, orders that

rates between the east and the interior west may not be more than one and one-third those between the east and the British Columbia coast.

Articles affected include canned goods, soap, confectionery, vegetable oils, paper, roofing, and glassware. The value of the traffic coming under the new rates has never been officially estimated, but it amounts to several million dollars a year.

Perhaps the major item is canned goods moving to the west from eastern Canada. The previous rate to Calgary and Edmonton from the Montreal-Windsor-Sudbury area was \$3.23 per 100 lb. This is now cut to \$2.09.

BRAZIL

Distribution to Staff

The Santos-Jundiai (formerly the British-owned San Paulo) Railway is to distribute among its employees the equivalent of £200,000, representing 10 per cent. of the company's estimated profits in 1951.

ARGENTINA

Accident to Air-Conditioned Train

An unusual accident occurred on January 21 to the new rapid air-conditioned express "El Marplatense" of the General Roca Railway, which had entered into regular service only a week before with the introduction of the new summer timetables. The train was on the return journey from Mar del Plata and was running at 120 km.p.h. between Coronel Vidal and General Pirán stations when an explosion occurred in the firebox of the locomotive. An inspector who was travelling on the footplate was blown out and killed, and the driver and fireman suffered severe burns, from which the fireman died within 24 hours.

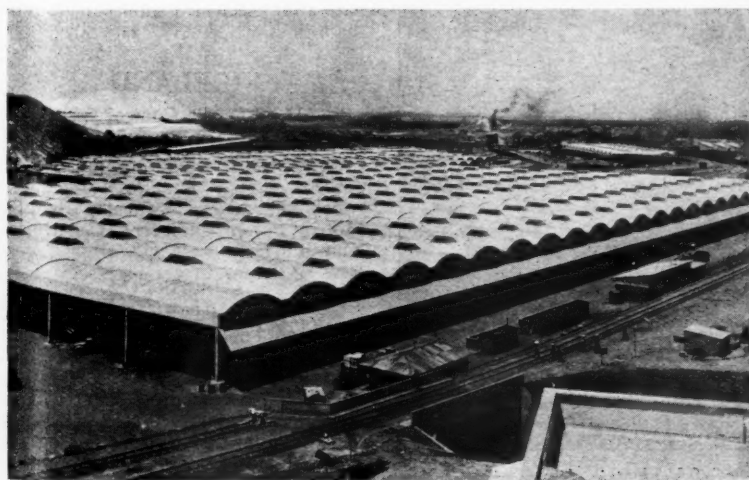
According to unofficial versions of the accident, it was caused by the collapse of the firebox roof with the consequent rupture of the boiler tubes, thus filling the footplate with high-pressure steam, water, fuel oil, and flames. No injury was caused to passengers and the train continued its journey later with a relief locomotive.

FRANCE

Rate and Fare Increases

As mentioned in our December 14, 1951, issue, the S.N.C.F. was authorised to increase its rates and fares with effect from January 28. The passenger fare increases amounted to fr. 1.25 per km., third class; fr. 1.20, second class; and fr. 1.15 first class. The freight rate increase was 10.5 per cent. for general freight traffic and 21.5 per cent. for small parcels. With these increases it is hoped to keep the S.N.C.F. deficit for 1952 down to fr. 100,000 million; at

New S.A.R. Goods Depot



New Kazerne goods depot, at Prospect, Johannesburg, S.A.R. The roof, covering 14 acres, is said to be the largest single concrete roof in the world

the previous level of rates and fares a recent estimate envisaged a deficit of fr. 144,000 million.

Although freight rates were increased on three separate occasions during 1951, passenger fares remained at the same level throughout the year. The view was widely held that increases in passenger fares would lead to a reduction in revenue, but circumstances have forced the hands of the S.N.C.F.

S.N.C.F. Receipts and Traffic

Total gross receipts of the S.N.C.F. during 1951 are estimated at fr. 331,323,971,000 (some £331 million at the existing rate of exchange). Passenger traffic produced a gross revenue of approximately £84,000,000; luggage, etc., some £1,700,000; parcels traffic (including mail), some £10,270,000. Gross freight receipts reached some £235,000,000. The total gross receipts during 1950 were approximately £261,000,000; the increase during 1951 was therefore slightly more than 26 per cent.

Much of this increase was the result of inflationary factors, there having been three separate increases in freight rates during the year. The level of freight rates at the end of 1951 was about 20 per cent. higher than at the beginning of the year. Wage rates and other costs rose at an even faster rate, and the deficit for 1951 is likely to be considerably higher than in 1950.

In 1951, 176,000,000 tons of freight originated on the S.N.C.F. in comparison with 151,000,000 tons in 1950, an increase over the year of 16.2 per cent.

S.N.C.F. Electrification Programme

As mentioned in our December 28, 1951, issue, it is expected that the final section of the Dijon-Lyons electrifica-

tion will be completed by the late summer, thus giving through electric working from Paris to Lyons. The S.N.C.F. then intends to proceed with the electrification at 1,500 volts d.c. of some 235 route-km. (146 route miles) of line around Ambérieu. Continuity of electric running at 1,500 volts d.c. will then be possible between Paris-Mâcon-Modane and Paris-Lyons-Modane. The electrification of these lines should produce a return of 11 per cent. on the capital expended. Twenty-five electric locomotives are expected to be sufficient to undertake the duties at present performed by 82 steam locomotives.

Further work on the Lyons-Marseilles line and on the suburban lines north of Paris is to be deferred, but work is to go rapidly ahead on the electrification of the Valenciennes-Thionville line on the 50-cycle, single-phase, 25,000-volt a.c. system.

Colour-Light Signals at Lyons

All lines in the Lyons area are ultimately to have automatic colour-light signals. A stage in this scheme was the recent changeover to this form of signalling of all the lines controlled by No. 1 signalbox at the Perrache Station.

NETHERLANDS

Increased Rates

Higher fares and rates were introduced on February 1. No change has been made in fares for distances below 13½ miles (22 km.). For distances between 13½ and 93 miles (20-150 km.) the increases are progressively from 4 to 15 per cent. Return fares are now from 3 to 15 per cent. higher, and season tickets about 6 per cent. higher.

On an average, fares are now 91 per cent. higher than in 1939. Despite this, the railways claim that their increased

fares are cheaper than the fares in any other country in Western Europe. The increase in goods rates for full wagon loads is 7 per cent.

New Electric Locomotives

In December the first of 25 new Co-Co locomotives was inaugurated at Hengelo. The locomotives are being built to American designs by Heemaf N.V. and Werkspoor N.V. The mechanical designs originated with the Baldwin Locomotive Works, Philadelphia, and the electrical design with the Westinghouse Electric International Company, Pittsburgh. Three locomotives are due to be delivered a month and the whole batch should be in service by the end of July. They are intended mainly for hauling coal trains from Limburg.

DENMARK

Copenhagen Suburban Extensions

During 1951, considerable progress has been made with the engineering works on the extension of the Copenhagen electrified suburban system, from Valby to Glostrup. The reconstruction of Valby Station includes the addition of a new platform for which a retaining wall some 2,300 ft. long had been constructed.

A flying junction is being built to eliminate fouling movements between the existing suburban line to Ballerup and the new branch to Glostrup. This branch will follow the Roskilde main line which is being widened for the purpose. On the main line itself, another flying junction, at Vigerslev, to permit the segregation of goods and passenger trains is nearly completed.

Preliminary planning work and land purchase are in hand for a south-western extension of the suburban system in the direction of Koge Bay and a northern branch towards Lundtofte. Preparations are well advanced for doubling and quadrupling existing sections in the Copenhagen area, with the ultimate aim of completely segregating the electrified suburban from the main lines.

IRELAND

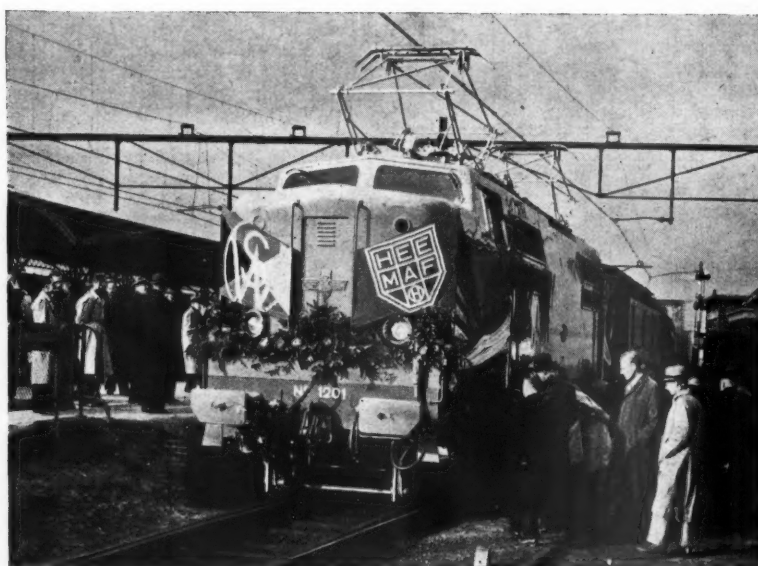
C.I.E. Traffic Control Office

The C.I.E. traffic control office is to transfer from temporary quarters at Amiens Street, Dublin, to premises which have been vacated by the Motive Power Engineer's Department, Kingsbridge.

C.I.E. Buffets

Coras Iompair Eireann is to spend £6,000 on improvements to buffets and bars at Dun Laoghaire, Bray and Limerick.

At Dun Laoghaire £3,000 will be spent in providing the buffet with a new snack counter and kitchen serving and a sales hatch opening on the station entrance hall. Kitchen and café equipment will be modernised. New toilets will be built and neon signs erected.



Inauguration at Hengelo of the first of 25 electric locomotives being constructed for the Netherlands Railways by Heemaf and Werkspoor

Photo.]

[R. Butler

Hollow Axles and Crank-Pins

Increased strength with reduced weight obtainable by boring axles and crank-pins

By E. C. Poultney, O.B.E., M.I.Loco.E.

THE boring of locomotive axles and crank-pins offers certain desirable advantages which do not in general appear to receive the recognition that might be expected. An examination of many comparatively recent locomotives, drawings of which have been published, show that usually both solid axles and pins are used, thus indicating that little practical consideration is given to the important improvements in the design of these parts, obtainable by the relatively simple operation of hollow boring.

While in general the foregoing remarks may be regarded as being substantially correct so far as British practice is concerned, there are certain exceptions. For instance, the new British Railways standard Class "7" locomotives have hollow axles for the leading truck and coupled axles, and the "Duchess" class locomotives of the same type, designed by Sir William Stanier for the former L.M.S.R., have hollow axles for the leading four-wheeled and trailing two-wheeled trucks in addition to those for the coupled wheels.

Some idea of the saving in weight attainable by boring axles will be realised when it is pointed out that, if an axle of any given uniform diameter has a hole bored through its centre throughout its

length equal in diameter to one-half the outside diameter, there will be a reduction in weight equal to 25 per cent. Further, the total surface area, being the sum of the outer and inner superficial areas, will be increased by 50 per cent., the significance of which will be referred to later.

Due to the fact that axles are not uniform in diameter, on account of having enlarged diameters at their ends to provide journal bearings, and that they are also frequently further enlarged to form wheel seats, the same ratio of internal diameters and minimum external diameters will not in practice give the same

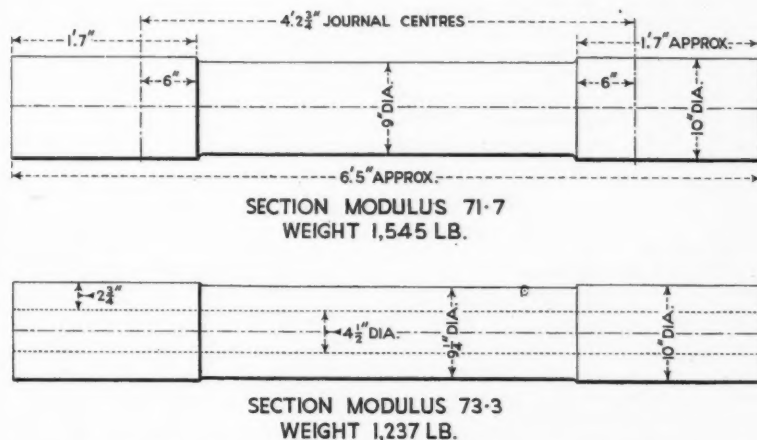


Fig. 1.—Solid and redesigned axle for coupled wheels of 5 ft. 6 in. gauge 2-8-2 type freight locomotive

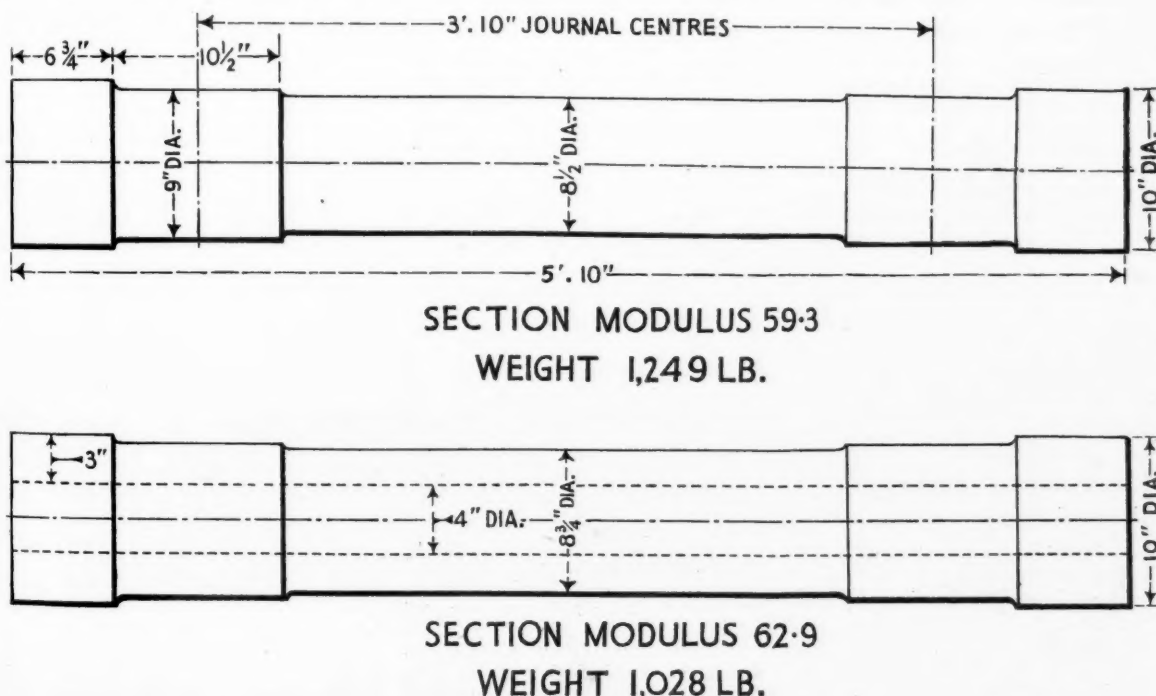


Fig. 2.—Solid and redesigned axle for intermediate, and trailing coupled wheels of a four-cylinder, 4-6-0 type express locomotive for the 4 ft. 8 1/2 in. gauge

percentage reduction in weight or an equal surface to weight of metal ratio. Even so, definite reductions in weight are attained, and how the hollow boring of both axles and crank-pins may be expected to affect their weights and the surfaces in relation to the weight of metal when strength is also taken into consideration, will be seen when actual examples are examined.

The increase in the size and power of modern locomotives has attracted some attention to the elimination of weight, and this, together with the fact that both axles and crank-pins are unsprung weights, would seem to suggest that weight reduction by boring sufficiently large holes through these details is worthy of more recognition than usually appears to be the case.

The fact that useful reductions in the weight of crank-pins may be had by boring out the centre core of the pin, though not so pronounced as in the case of axles, is nevertheless advantageous because every pound of weight in the revolving parts that can be saved enables a saving to be made in the counterbalance. Weight reduction by using bored axles and pins may be called the mechanical aspect of this subject.

Metallurgical Advantages

Beyond a purely mechanical advantage, there is also a gain when considered from a metallurgical standpoint. All locomotive forgings receive some form of heat treatment after the forging process has been completed. Heat treatment may consist of a simple annealing, re-heating followed by a slow cooling, or, alternatively, normalising, being heated and then cooled in the air. In other instances, the heat treatment specified is more elaborate, involving quenching and tempering. In this case, the forging is heated to a specified temperature and afterwards quenched in water or oil, followed by heating to some lower temperature.

Whichever kind of heat treatment is given, the physical properties of the steel will be influenced by the thickness of the metal thus treated and by the extent of the surfaces through which the heating and cooling effects can penetrate the metal. It will be clear from the foregoing that the greater the surface in relation to the weight of metal, the more effective will be the heat treatment and the better will be the physical properties of the steel, which will tend to be more uniform in its physical characteristics. By the boring of axles and pins the surface per unit weight of material is increased, so that beyond simply reducing weight any heat-treating process is also greatly facilitated.

In order to illustrate how improvements are made possible by the use of axles and crank-pins with large holes bored through their length, some examples may be examined. Figs. 1 and 3 show how axles and main crank-pins may be improved by redesigning. The upper drawing (Fig. 1) shows a solid steel axle as used for the coupled wheels of a large eight-coupled 2-8-2 type freight

locomotive for the 5 ft. 6 in. gauge. This is a solid axle having journal bearings 10 in. by 12 in. and at the centre the diameter is 9 in., giving a section modulus of 71.7, and the finished weight is about 1,545 lb. The following table sets out the properties of two modifications of this same axle with 3½- and 4-in. holes bored through the centre.

With each boring there is a reduction in weight accompanied by some reduction also in the value of the section modulus. The weight reductions are 13.6 and 17.7 per cent., and the surface of metal per pound weight rises from 1.48 sq. in. originally to 2.66 sq. in. with a 4 in. bore.

PARTICULARS OF SOLID AND BORED AXLES

	Outside dia., in.	Bore dia., in.	Section modulus	Weight, lb.	Wall thickness in.	Total surface, sq. in.	Weight reduction, per cent.	Surface sq. in. per lb. weight	
Fig. 1	9	Solid	71.7	1,545	9	2,289	—	1.48	Original design Bored to retain approximately equal values for the section modulus Bored to attain min. wt. with adequate strength
	9	3½	70.1	1,335	2½	3,014	13.6	2.25	
	9	4	68.9	1,271	2½	3,257	17.7	2.66	
Fig. 2	8½	Solid	59.3	1,249	8½	1,975	—	1.57	Original design Redesigned min. wt. and adequate section modulus
	8½	4	62.9	1,028	2½	2,868	17.6	2.79	
Fig. 4	9½	4½	79.8	1,198	2½	3,148	—	2.62	

Section modulus at centre of axle in all cases. Wall thickness minimum centre of axle in all cases

The lower drawing Fig. 1 shows the solid axle redesigned to maintain equal strength with reduced weight. The outside diameter is increased by ½ in. only, and the axle is bored out 4½ in. The section modulus at the centre is 73.3 and the weight is down to 1,237 lb., or very nearly 20 per cent. The surface weight ratio is 2.92 as against 1.48 originally. It is true, of course, that any appreciable increase in diameters, especially of the journals, means larger and, in consequence, heavier axleboxes and a greater width between the axle-box guides, but any increase necessary would usually be negligible.

Express Locomotive Axles

The axle shown in the upper drawing, Fig. 2, is one used for the intermediate and trailing coupled wheels of a four-cylinder 4-6-0 type express locomotive, for the 4 ft. 8½ in. gauge. These are solid axles with 9 in. by 10½ in. journal bearings; they have a finished weight of 1,249 lb., a section modulus of 59.3 and a surface/weight ratio of 1.57 to 1.

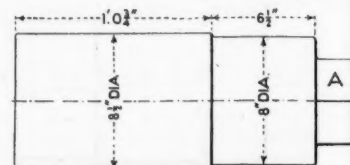
The lower drawing Fig. 2 is the same axle bored out in 4 in. diameter and the centre part increased in size from 8½ in. to 8½ in. diameter. As thus redesigned, the weight finished is 1,028 lb., a reduction of 17.6 per cent., and the surface/weight ratio is 2.79 to 1, while the section modulus is 62.9. It may be noted that boring out the original axles, the same amount would have given a section modulus of 56.3 and an axle weight of 997 lb., representing a reduction of 20.5 per cent.

The upper drawing, Fig. 3 shows the main crank-pin for the 5 ft. 6 in. gauge,

2-8-2 type engine. This is a solid pin having 8½ and 8 in. diameters. The section modulus at 8½ in. diameter is 59.3 and the weight finished, 297 lb. The lower drawing Fig. 3 shows how this pin could be redesigned and considerably improved. The diameters are increased by ½ in. and a hole 4 in. diameter bored as shown. The weight is brought down to 247 lb., 16.8 per cent., and the section modulus of 59.3 is increased to 62.9. There is a small increase in diameter, but not sufficient to make any serious difference to the size and weight of the main rod large ends.

The surface/weight ratio is obviously greatly improved and is, in fact, increased from 1.69 to 3.06, thus facilitating any heat-treating process which may be desired.

The drawing, Fig. 4, is a hollow bored axle as used for large Pacific express engines of the four-cylinder type for the 4 ft. 8½ in. gauge. Though of considerable proportions, having ample journal bearings and large wheel seats, the weight is only 1,198 lb. Heat treatment is facilitated



SECTION MODULUS 59.3
WEIGHT 297.5 LB.



SECTION MODULUS 62.9
WEIGHT 247.2 LB.

(WEIGHTS DO NOT INCLUDE END A)

Fig. 3.—Solid and hollow bored main crank pin for 5 ft. 6 in. gauge 2-8-2 locomotive

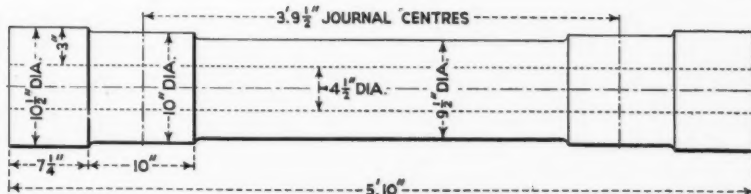
by boring a large diameter hole through the axle, thus giving a surface/weight ratio of 2.62 to 1, based on the finished sizes.

In the case of this axle, used for the

intermediate and trailing coupled wheels, open hearth acid steel is specified, having a tensile strength of 30/40 tons per sq. in. The heat treatment required consists of re-heating to a temperature of 860° C. and then quenching in oil for a period of four minutes, the effect of which will no doubt be facilitated by the 4½ in. bore through the axle.

Bored Axles and Crank-pins

While it is not intended to suggest hard-and-fast rules for outside and inside diameter ratios for hollow axles and crank-pins, it may be remarked that practice seems to indicate that the maximum diameter of the bore should be one-half the nominal outside diameter. This means that the wall thickness should not be less than one-quarter of the minimum outside diameter of the axle, which would be the distance measured between the journal bearings,



SECTION MODULUS 79.8

WEIGHT 1,198 LB.

Fig. 4—Hollow bored axle as used for Pacific express engines of the four-cylinder type for the 4 ft. 8½ in. gauge.

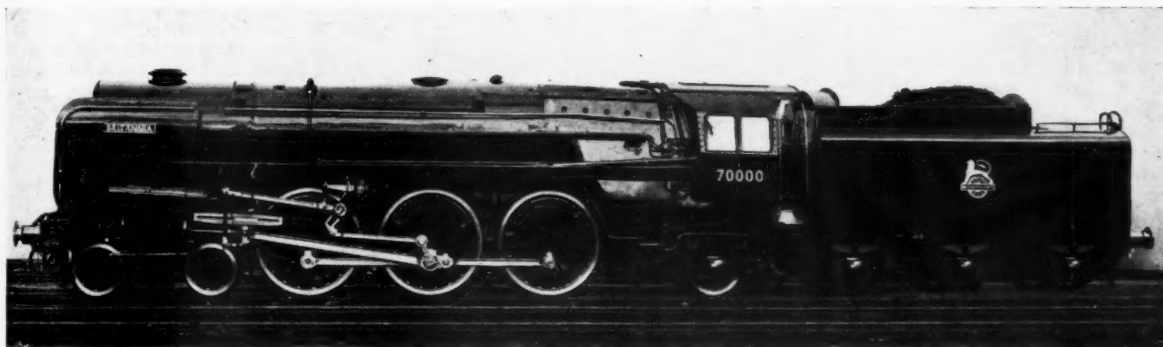
diameter, the following sizes would be obtained:—

Outside dia., in.	Bore, in.
6 to 7	3
7 to 8	3½
8 to 9	4
9 to 10	4½
11 to 12	5½

It will be seen that by basing the dia-

centres are pressed on by hydraulic pressure.

The axle, Fig. 1, which has journal and wheel seatings of equal diameters, would, if bored out as shown in the lower drawing, have a wall thickness of 2½ in. at the wheel seats, which would seem to be satisfactory when judged



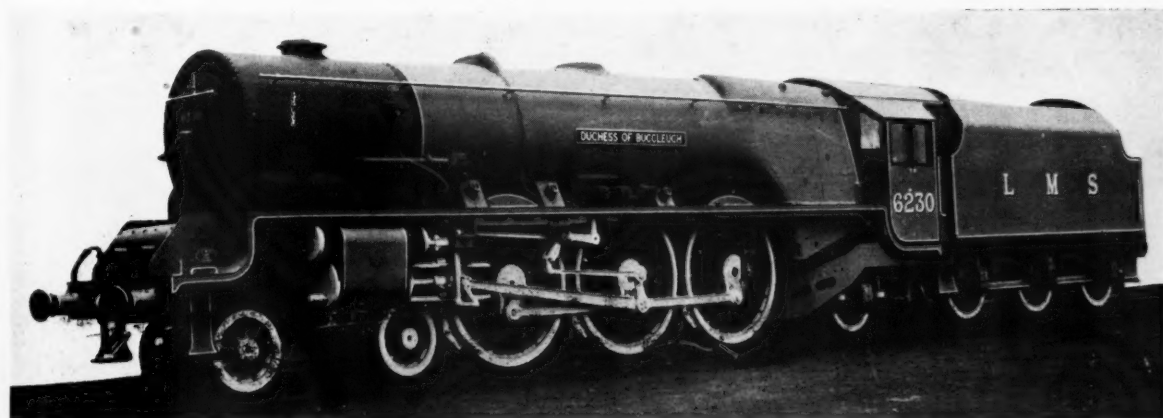
British Railways standard Class "7" locomotive fitted with hollow axles on the leading truck and coupled wheels.

or wheel seats in the case of outside journals.

On the other hand, strength considerations as indicated by the section modulus are to be taken into account, as will have been noted when the examples illustrated were considered. Accepting as a good general guide for the boring out of axles and pins, the suggested minimum wall thickness of one-quarter of the smallest outside

meter of the bore on the minimum outside diameter of the axle, there will usually be what would seem an adequate thickness of metal at the wheel seats because of the increased diameters at the ends for not only wheel seatings but also for the journals. The importance of this will be appreciated for the reason that it is necessary to guard against any possibility of the axle not being sufficiently strong to resist collapse when the wheel

from this standpoint. The axles, Figs. 2 and 4, are of somewhat more conventional design, having enlarged ends for the wheel seats and the retaining keyways. Now that roller bearing journal boxes are being fitted so generally to engine axles, axles as shown in Figs. 2 and 4, are no longer possible and the design shown in Fig. 1 is required. In this case the metal thickness at the wheel seats will be given consideration.



"Duchess" class locomotive having hollow axles on the bogie, trailing truck and coupled wheels

First British Main-Line Freight Electrification—2*

Alterations to signalling, and civil engineering works which include provision for subsidence, on Wath-Dunford Bridge section



Reconstructed overbridge at Gilroyd Lane with pre-stressed concrete beams and parapet

THE main alterations in the signalling in conjunction with the electrification of the line, which have been carried out by the staff of the Railway Executive, are: the conversion of the existing d.c. track circuits to a.c.; the moving out of the distant signals on the main lines to give increased braking distances, and their conversion to colour-light type; small re-signalling schemes; and cabling the overhead telegraph wires.

All existing d.c. track circuits in the area have been converted to a.c. working and are of the condenser-fed type of double rail impedance bond or of single rail form, as necessary. Distant signals on the main lines have been converted to colour-light type and moved out to give increased braking distance. Where a distant signal was carried below a stop signal, the stop signal has also been converted and the two combined in one colour-light signal.

At some places it has been necessary to carry the new signals on the traction overhead line equipment structures, which have been specially designed to carry them in cages suspended from the structures. Colour-light signals have also replaced the existing semaphore signals where the overhead line equipment obstructed the view. Signal brackets and gantries in the mining subsidence area have been constructed with telescopic main supports to enable clearances to be maintained as subsidence occurs.

In connection with the provision of

locomotive exchange facilities at Wath, Elsecar Junction, and Wombwell Main Junction, new colour-light signals have been installed. Points situated beyond the mechanical working distance have been fitted with electrical point machines operating on 110 V. d.c.

At Wombwell Main Junction and Elsecar Junction the electrically-operated points and the colour-light signals are worked from small panels

fixed over the centre portion of the mechanical lever frames and electrically interlocked with them. A new 90-lever mechanical frame has been installed at Barnsley Junction signalbox in connection with additional locomotive facilities which have been provided.

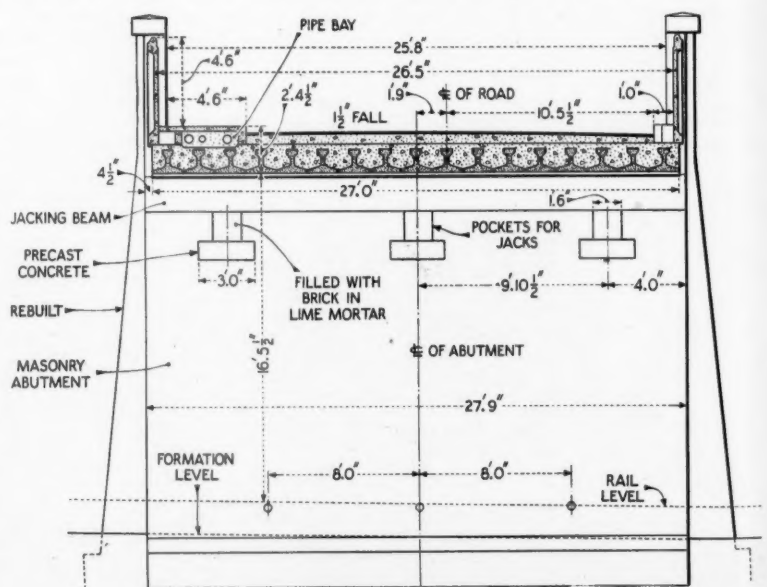
In the Penistone area it was necessary to convert a number of signals to colour-light type to dispense with the semaphore signal gantries and brackets which prevented the traction catenary equipment from being erected. Throughout the area it has been necessary to make alterations to signalling equipment to make way for the overhead line structures.

All the overhead open wire circuits have been cabled. Paper-insulated, lead-covered cable has been used and, in general, run on a stake route at the side of the track. Where a stake route was not practicable pre-stressed concrete surface troughing has been used. Repeaters have been provided where they were necessary.

Signalling Supply

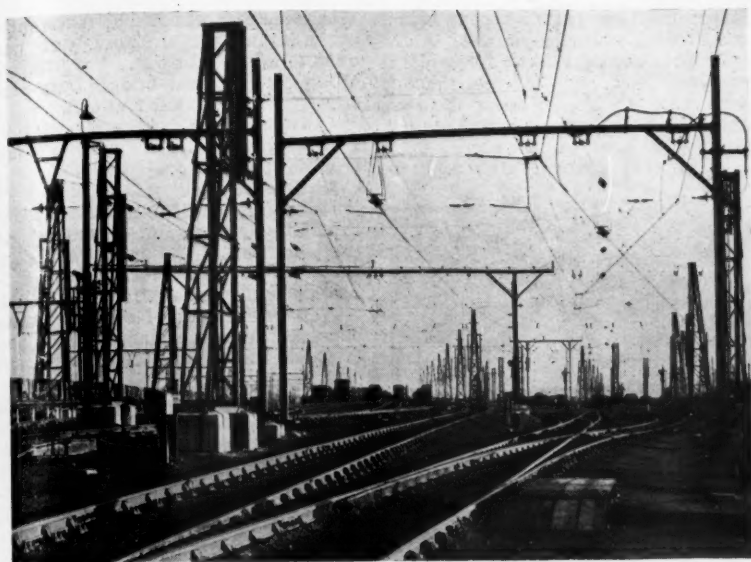
The new signalling and track circuits are supplied with power taken from the traction substations and distributed throughout the area at 660 volts, stepped down to 110 volts at the signal locations, and so on, as required. Standby power equipment has been provided at Aldam for the Wath area to provide a signalling supply in the event of a serious fall in voltage or frequency of the incoming supply.

The set consists of a 40 h.p. diesel engine directly coupled to an alterna-



Elevation of north abutment, Gilroyd Lane Bridge

* Part 1 appeared in our issue of February 8



Reception and departure roads, Wath Yard

tor, having an output of 25 KVA, 415-volts, three-phase, 50 cycles. The normal supply from the traction substation is at 415 V. three-phase, 50 cycles, and is transformed to 660 V. single-phase, by three-phase to single-phase transformers.

The civil engineering works have been limited principally to the reconstruction of bridges where clearances were not available for electrification and also to the provision of exchange sidings and a locomotive shed for the changeover between steam and electric working at Wath-on-Dearne, the starting point of the scheme.

Formerly the Eastern Region was responsible for all work between Manchester and Sheffield and Wath, but since the revision of boundaries the Region is now responsible only for the portion from Wath-on-Dearne to Thurlstone and from Barnsley Junction to Sheffield.

The bridges were stone arches for which there was insufficient clearance. They posed no great problems, except perhaps that some of them from a point east of Oxspring were subject to earth subsidence as a result of mining.

It was considered in view of the likelihood of further subsidence, which would necessitate lifting the bridge superstructure to overcome infringements to clearances, that the opportunity should be taken to provide for jacking the bridge superstructure and to introduce prestressed concrete beams to save steel and future maintenance.

When the arches were removed the bridge superstructures were built up to the required minimum clearance of 14 ft. 6 in. Jacking beams were placed on top of the abutments with jacking pockets let in the face, so that if necessary the decks could be easily raised in the event of further sinking.

The first bridge so constructed was Gilroyd Lane, on the Penistone-Wath

section. It is economical in construction and is the first partially prestressed, composite construction bridge deck in the world. Sealithor cement replaced Portland as it was found that it would resist acid and thus enable smoke plates to be dispensed with.

No great difficulty was experienced in the reconstruction of the bridges; in fact it was found that the deck beams could be placed in two or three hours from the beginning of the possession or, in fact, between trains by a crane on the roadway. Some bridges were constructed by maintaining the road traffic over the existing abutment. Where traffic was heavier it was necessary to reconstruct a temporary bridge of timber alongside the existing bridge.

The other main engineering works were exchange sidings and an electric locomotive depot at Wath-on-Dearne.

Unfortunately the site is in a bad area of mining subsidence, and immediately before work began it was learnt that there would be an anticipated sinking of 5 ft. over the area of the work. It was decided therefore to construct the locomotive shed with independent engine pits, hinged in short lengths throughout, and design it as a series of braced portal frames, with two anchor frames at each end of the shed. The intermediate frames were in pairs double hinged at each foot and connected to the next pair with side rails in which slotted joints were provided, to allow for movement taking place and to enable the shed to settle without distortion.

Effect of Subsidence

At the time as the foundations were completed the draw from mining subsidence was beginning to take place. About January, 1950, the effect of draw was noticed on gas and water pipes which had been laid but not finally connected to the main services. The draw was also noticed on the tracks; the coach screws were pulled out of the chairs and some chairs were broken.

The levels within one month registered a sinking of over 12 in. between Moor Road Bridge and the shed, a distance of 400 ft. The sinking over the next seven months reached 3 ft. 9 in. The draw and subsidence passed westwards along the building and the subsidence reached a depth of approximately 3 ft. at the east end and 2 ft. 9 in. at the west end of the shed when it was noticed that the levels had become more or less constant, suggesting that the subsidence had ceased.

Apart from the movement reflected in the slotted holes in the side rails there was little other evidence that sinking had taken place as no distortion of the structure showed except where portions of the slab floor had to be relaid.

A turntable along with engine pits had to be provided for the exchange of steam locomotives. In view of the



Interior of repair shop, Wath electric locomotive depot

ground difficulties it was decided to construct the foundation in pre-stressed concrete with post tensioned wire to a cartwheel design—a novel construction. The whole formation of the site from the exchange sidings to shed and turntable was made up by taking inert spoil from the adjacent tip

manner, but this proved expensive and was avoided wherever possible.

To obtain a clear route for cables it was found necessary to cross the line from time to time. Where this was necessary cables crossed under the track through banks of asbestos cement ducts in a mass of concrete at a depth of

Where the parapet could be raised without affecting the structure, this was done to a height of 6 ft. The parapets on all reconstructed bridges over electrified lines were raised to 6 ft.

The contractors and principal sub-contractors for the civil engineering and electrical works are:—

Civil Engineering

Reconstruction of overbridges at Gilroyd Lane, Hound Hill, Penistone, and near Hazlehead Station. *Main Contractor:* Wellerman Bros. Limited; *Sub-contractor:* Dow-Mac Products Limited.

Wath-on-Deane: New locomotive depot, earthwork, engine pits, shed and turntable foundation. *Main Contractor:* C. R. Price.

Penistone Control Station. *Main Contractor:* C. R. Price; *Sub-contractors:* Jaconello Limited, Henry Hope & Sons Limited.

Aldham Junction substation, Dunford Bridge substation, Barnsley Junction substation, Elsecar track sectioning cabin, Bullhouse track sectioning cabin. *Contractor:* C. R. Price.

West Silkstone track sectioning cabin, Strafford Crossing substation. *Contractor:* T. Jenkinson & Sons (Doncaster) Limited.

Electrical

Substations

Main contractor: Bruce Peebles & Co. Ltd.

Sub-contractors: A. Reyrolle & Co. Ltd., British Thomson-Houston Co. Ltd., Standard Telephones & Cables Limited.

Cables

Main contractor: W. T. Henleys Telegraph Works Co. Ltd.

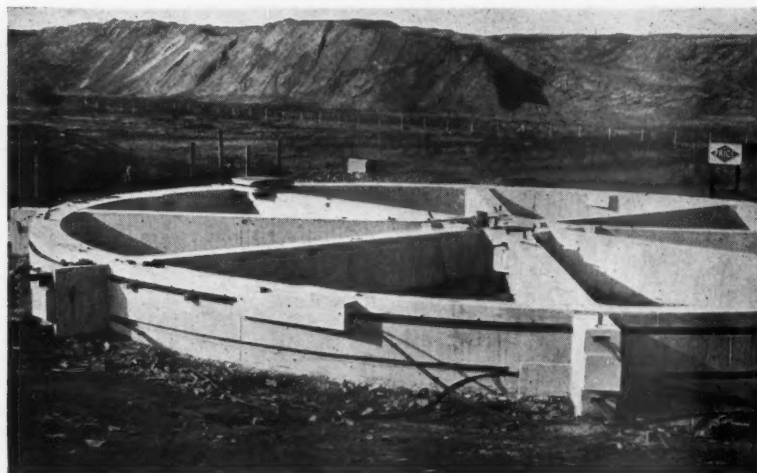
Sub-contractor: Standard Telephones & Cables Limited.

Overhead Line Equipment

Main contractor: British Insulated Cables Limited.

Sub-contractors: Cargo Fleet Iron Co. Ltd., Redpath Brown & Co. Ltd., Robinson & Kershaw Limited, Bullers Limited.

(To be continued)



Pre-stressed foundation of turntable for steam locomotives, Wath

of the Wath Main Colliery. This was an excellent and useful material, and it consolidated in a short time. The weather was dry and when the rain came consolidation was rapid and the spoil, being free from mud, provided a good foundation for tracks and other works.

In addition many other works had to be undertaken concurrently with the operations of other departments' contractors. Amongst these were the alterations and slewing of layouts in yards to obtain statutory clearance for stock, arising principally from overhead line equipment at certain structures. Where improvement could be effected by lowering tracks under bridges a method of obtaining clearance was found in this

3 ft. 6 in. below sleeper level. These crossings were numerous and involved in many instances the possession of the track while the work was carried out and the placing of way beams during excavation.

A number of level crossings was closed. At those remaining it was necessary to provide a form of overhead load gauge to warn road vehicle drivers where their load may exceed the height of the overhead wires. In addition many footbridges had to be raised to a height of 20 ft.

At footbridges with parapets of the open lattice type special precautions had to be provided where the overhead line passed underneath the bridge to give protection to children and others.

SCOTTISH SUGAR BEET CROP MOVEMENT.—A total of 8,868 wagons was needed to convey the 1951 beet crop to the sugar beet factory at Cupar, Fife. The total tonnage handled by the Scottish Region was 84,712 and the average wagon load was 9.6 tons. Towards the end of the season, which extended from October 15 to December 26 last, 40 wagons with 513 tons of unrefined sugar beet from Spalding were handled at Cupar.

SALE OF LLANELLY & DISTRICT TRACTION UNDERTAKING.—The South Wales Electricity Board has agreed to sell the Llanelly & District Traction Undertaking, operator of both trolley vehicles and motor omnibuses, to the South Wales Transport Company, a subsidiary of the British Electric Traction Co. Ltd. An announcement by the South Wales Transport Co. Ltd. states that the Minister of Transport has agreed to the sale. The transfer will become effective as soon as the South Wales Transport Co.

Ltd. has obtained the necessary road service licences. The Llanelly & District Traction Undertaking was originally owned by the former Llanelly & District Electric Supply Company; it was vested in the South Wales Electricity Board on April 1, 1948, under the Electricity Act, 1947.

NEW ORGANISATION OF GERMAN FEDERAL RAILWAY.—On December 18 a law came into force by which the organisation of the Deutsche Bundesbahn, and its relations with the State are established on new bases. The Bundesbahn thus becomes a special patrimonial administration of the Federal State, without juridical personality of its own. It is composed of the Presidency, formed by four members instead of nine as before, and the Board of Directors, consisting of twenty members. The Presidency handles the business of the Bundesbahn, according to directions established by the Board of Directors. The Board, subject in certain cases to the approval of the

Federal Minister of Transport, decides on questions of principle attributed to it by the law of December 18, as well as other questions of a general nature. It also has the right to decide on important questions, when a qualified majority of its members is in accord. In all other cases, the administrative organisation of the Bundesbahn is governed by a regulation, submitted to the Board of Directors by the Presidency, and subsequently approved by the Federal Minister of Transport. The General Direction (Hauptverwaltung) of the Bundesbahn formerly a department of the Ministry, has now been detached from it.

NYASALAND RAILWAYS LIMITED CHANGE OF ADDRESS.—The offices of the Nyasaland Railways Limited, the Central Africa Railway Co. Ltd., and the Trans-Zambesia Railway Co. Ltd. are now at City Wall House, 129-139, Finsbury Pavement, London, E.C.2. The telephone number is Monarch 1292.

Locomotives for East Africa

Though intended for service on the 3 ft. 3½ in. gauge, these locomotives can be converted to 3 ft. 6 in. gauge

AMONG the locomotives recently constructed by the North British Locomotive Co. Ltd. are sixteen "29" class engines for the East African Railways & Harbours. The locomotives are to the requirements of Mr. G. Gibson, M.I.Mech.E., M.I.Loco.E., Chief Mechanical Engineer, and were designed and constructed under the supervision of the Crown Agents for the Colonies. Built to the 3 ft. 3½ in. gauge, the locomotives are so designed that they can be converted to the 3 ft. 6 in. gauge with the minimum of alteration. The design is based on the 3 ft.

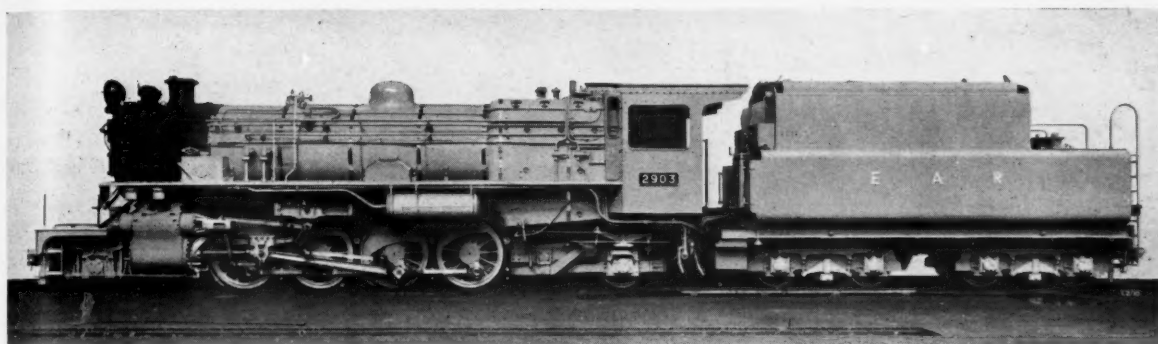
The firebox, roof, and waterspace stays are of Dunic steel, and flexible stays are provided in the breaking zones. The locomotive is arranged for burning oil fuel, but can be readily converted to burn solid fuel if required.

The firepan is as deep as the design permits, with two burners fitted at the front of the box. The Melesco superheater header incorporates a multiple-valve regulator, and a Melesco steam dryer is fitted in the dome. The boiler and firebox are lagged throughout with asbestos mattresses. General steam fittings include three Gresham & Craven

tween leading truck, trailing truck, and tender bogies. Laminated bearing springs are fitted to all coupled wheels and to front and hind trucks.

Draw Gear

Compensation is arranged in two groups—between front truck to intermediate coupled wheel and driving, to hind truck wheel. Automatic couplers of MCA-PH type are fitted at front of engine and back of tender. The frames at the front end of the engine and the back of the tender, together with the buffer beams, are arranged to accom-



North British "29" class locomotive for East African Railways & Harbours

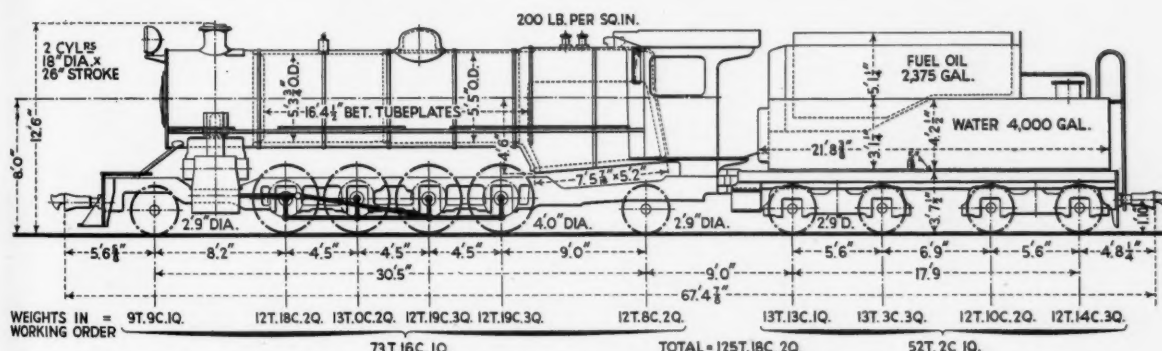


Diagram showing principal weights and dimensions of the locomotive

6 in. "River" class engines in service on the Nigerian Railway, which were described and illustrated in our issue of May 7, 1948.

Design Features

The boiler barrel consists of two rings, the external diameter at the firebox end being 5 ft. 5 in. The length between tubeplates is 16 ft. 4½ in. and there are 28 superheater flue tubes of 5½ in. external diameter and 125 small tubes of 2 in. external diameter. The firebox is of the Belpaire type with steel inner box of all-welded construction.

No. 9 non-lifting type injectors, two 1½-in. Everlasting blow-off cocks, two 3 in. diameter Ross pop safety valves, and two sets of Klinger type reflex water gauges.

The main frames are machined from rolled slab finished to a thickness of 4 in. suitably braced by transverse stays. British Timken roller bearing axleboxes are fitted to all axles of the locomotive and tender. Coupled axleboxes are of the cannon type, and all tender and carrying wheels and axles, complete with roller bearing axleboxes, are identical and interchangeable as a unit be-

modate the American knuckle type coupler in addition to the M.C.A. coupler.

Walschaerts valve gear actuates 10 in. dia. piston valves and reversing gear is of the hand-screw type. The cylinders are lubricated by a Silvertown 8-feed mechanical lubricator, and Wota bypass valves are fitted to the steam chests. The cylinder barrels are fitted with renewable cast-iron liners. Lambert sanding equipment is provided, and sand is delivered from boxes on the platforms to the front of leading and driving coupled wheels.

Steam brake equipment is provided for the engine with air brake to tender and train. The steam brake includes an air-operated graduable steam brake valve, and the Westinghouse fittings include two 10 in. \times 10 $\frac{1}{2}$ in. compressors, a 10 in. \times 10 in. equalising reservoir, and a No. 4 drivers brake valve. The compressors are lubricated by means of a Wakefield 2-feed hydrostatic lubricator.

Air Brake Equipment

The air brake equipment is so designed that should it be required to change to the automatic vacuum brake, the changeover can be made with the minimum amount of alteration.

Stone's electric lighting equipment is provided, and includes turbo-generator, headlamp at front of engine, special

10 in. trailing headlamp at back of tender, gauge and lubricator lights, motion light, injector overflow lights, and fuel tank light.

The tender is of the four-wheel double-bogie type and the capacities of the water and oil fuel tanks are 4,000 gal. and 2,375 gal. respectively. The water and fuel tanks are of welded construction, but the internal stays and wash-plates of the water tank are riveted to tees welded to the sides of the tank.

The frame is built up of longitudinal and cross-channels of riveted and welded construction with cast-steel drag-boxes at front and back. The bogies are of the plate-frame spring beam type and fitted with British Timken roller bearing axleboxes interchangeable with those of the front and hind trucks of the engine.

In addition to the air brake a hand brake is also fitted. The principal dimensions of the locomotive are:—

Cylinders, dia. \times stroke	... ..	18 in. \times 26 in.
Wheels, coupled, dia.	... ..	4 ft.
" front truck, dia.	... ..	2 ft. 9 in.
" hind truck, dia.	... ..	2 ft. 9 in.
" tender bogie, dia.	... ..	2 ft. 9 in.
Wheelbase, coupled	... ..	13 ft. 3 in.
" engine	... ..	30 ft. 5 in.
" engine and tender	... ..	57 ft. 2 in.
Height, rail level to boiler centre	... ..	8 ft.
" top of chimney	... ..	12 ft. 6 in.
Heating surfaces:—		
Tubes	... ..	1,732 sq. ft.
Firebox	... ..	146 "
Total evaporative	... ..	1,878 "
Superheater	... ..	446 "
Total	... ..	2,324 "
Graze area (for solid fuel)	... ..	38 "
Boiler pressure	... ..	200 lb. per sq. in.
Weight of engine in working order	... ..	73.81 tons
" tender in working order	... ..	52.11 tons
" engine and tender in working order	... ..	125.92 tons
Adhesive weight	... ..	51.92 tons
Tractive effort at 85 per cent. boiler pressure	... ..	29,835 lb.

Delayed Sound Reproduction

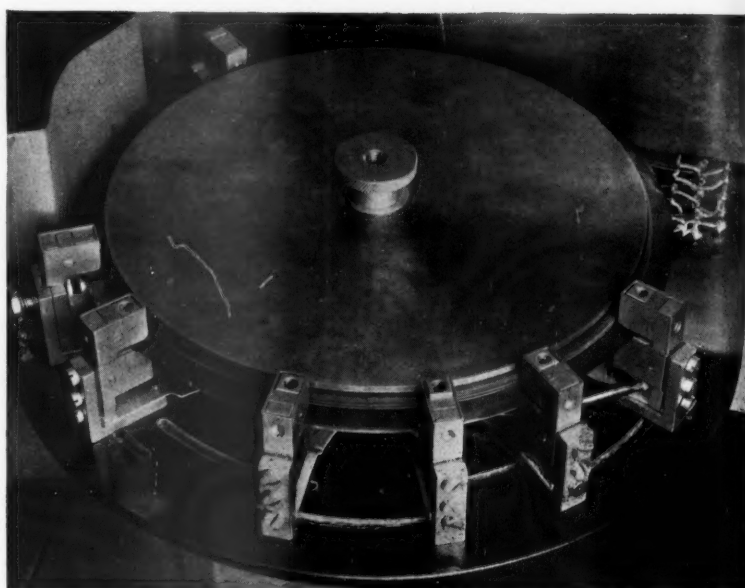
New recording and play-back system avoids interference between loudspeakers for station announcements

STATION announcing systems usually are planned so that travelers hear only the loudspeaker nearest to them. This prevents interference with intelligibility by the sound arriving a fraction of a second later from a more distant loudspeaker. The methods for achieving this result include suitable spacing and a low output level from individual instruments.

In some circumstances, however, it may not be easy to avoid interference between loudspeakers if adequate coverage and audibility above background noises are provided. To meet such conditions a system known as Delayed Sound Reproduction (D.S.R.) has been developed by Pamphonic Reproducers Limited, of Westmoreland Road, London, N.W.9. The principle of this system is that the sound from any loudspeaker is delayed so as to be reproduced simultaneously with the arrival in the area it serves of the sound from more distant instruments. Therefore the local signal reinforces the remote one instead of being out of phase with it.

Instead of being fed directly into an amplifier, an announcement is recorded as it is made on a rotating disc coated with magnetic iron oxide. Play-back heads are spaced round the edge of the disc at intervals according to the delays required at different loudspeakers. These heads are connected to pre-amplifiers, which in turn feed the main power amplifiers. An erase head after the series of play-back heads restores the coating of the disc to its original condition ready for further recording. A very wide range of delay is possible, the maximum representing a distance of 600 ft.

The whole equipment is mounted in two racks. Immediately above the



Arrangement of recording, play-back and erase heads round circumference of recording disc in the Pamphonic equipment

delay mechanism in one rack are the play-back head pre-amplifiers and frequency correction filters. These units are mounted on separate panels so that for a small D.S.R. system the price of the equipment can be reduced by fitting only those channels that are required. At the top of the rack is the recording amplifier, with protective grille, and below this is the sound level meter panel.

The pre-amplifier signals are fed to the power amplifiers on a second rack frame. Up to six amplifiers with out-

puts of 10, 25, or 50 watts, according to the size of the system, may be so mounted. All amplifier power supplies are located at the bottom of the first rack.

Equipment of this type offers a possible solution for sound reproduction problems in areas such as large station concourses, where numbers of loudspeakers are required in an arrangement less regular than that of the usual in-line scheme adopted on platforms, and background noise at times may be high.

RAILWAY NEWS SECTION

PERSONAL

The North Eastern Region announces the appointment of Mr. Sydney Cott, Assistant District Passenger Superintendent, Euston, London Midland Region, as District Passenger Superintendent, Newcastle.

Mr. F. L. Castle has been appointed to the board of Directors of the Siemens and General Electric Railway Signal Co. Ltd.; he has been General Manager of the company for 26 years.

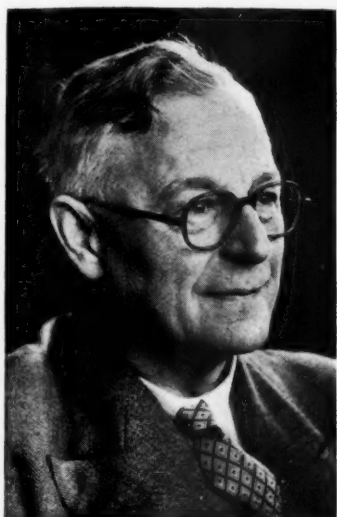
Mr. Lancelot Ballan, O.B.E., M.Inst.T., District Commercial Superintendent, Hull, North Eastern Region, who, as recorded

Mr. Brendan A. McGrath has been appointed full-time Solicitor to the board of Coras Iompair Eireann. Mr. McGrath was formerly a Partner in the firm of Joseph Gleeson, McGrath, Baldwin & Company, Dublin.

Mr. Matthew Wallace, Solicitor to the British Transport Commission in Scotland, who, as recorded in our January 25 issue, is retiring from the Commission's service on March 28, was born in 1889, served a Law apprenticeship with Mackey & McIntosh, Solicitors, of Glasgow, and joined the legal staff of the Caledonian Railway in 1913. Mobilised as a Territorial in August, 1914, he served first with the 7th Cameronians at Gallipoli and later

of his railway colleagues, friends and representatives of the various committees on which he served, attended to pay their last respects. Those present included Mr. S. W. Smart, Superintendent of Operation, together with members of his staff, also representatives from other Regions who served on various committees with Mr. Eagle.

Mr. Alan Cameron Miller, M.A., LL.B., Advocate, at present Sheriff-Substitute of Inverness, Moray, Nairn, and Ross and Cromarty at Fort William, who, as recorded in our January 25 issue, has been appointed Legal Adviser to the British Transport Commission in Scotland, will take up his new appointment on April 1.



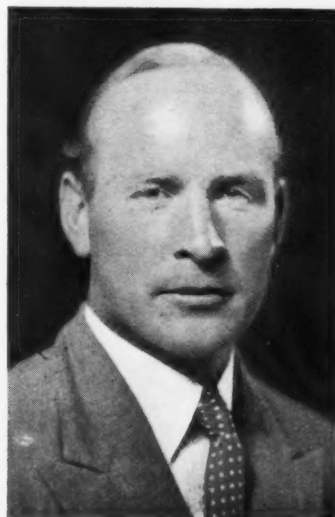
Mr. Lancelot Ballan

Appointed District Goods Superintendent, Newcastle, North Eastern Region



Mr. Matthew Wallace

Solicitor to the British Transport Commission in Scotland, who is retiring



Mr. A. Cameron Miller

Appointed Legal Adviser to British Transport Commission in Scotland

in our January 11 issue, has been appointed District Goods Superintendent, Newcastle, was born at Thornaby-on-Tees, educated at Hymers College, Hull, and joined the North Eastern Railway as a clerk in 1909. After the first world war, when he served with the Manchester Regiment and the Docks Directorate, Mr. Ballan was appointed Chief Clerk (Railway) in the District Goods Manager's Office at Hull in 1921. Two years later he was made Assistant District Goods Manager, Newcastle. Until 1926, when he was appointed Trains Assistant to the Superintendent, North Eastern Area, York, Mr. Ballan served as Mineral Traffic Controller at Hull, and later in the Trains Section of the Superintendent's Office at York. For two years (1926 and 1929) he was Secretary of the L.N.E.R. Superintendents', and Superintendents' and Passenger Managers' Committees. Mr. Ballan became District Superintendent, Sunderland, in 1931, and became District Superintendent at Hull in 1940. From 1940-45 he was Chairman of the Hull Port Emergency Committee. In 1945 he was appointed District Goods Manager at Hull and became District Commercial Superintendent, Hull, in 1950. Mr. Ballan was awarded the O.B.E. in June, 1944. He is a Serving Brother of the Order of St. John.

with the 12th Highland Light Infantry in France, where he was severely wounded. In 1926 he was appointed an Assistant, dealing with Sheriff Court and general work; and in 1928 he became a Senior Assistant, in charge of Court of Session, Sheriff Court practice, and valuation appeals. During his tenure of that position he had extensive experience of litigation in all branches of railway and commercial law, and also shipping cases. He was intimately involved with the first quinquennial valuation of the Scottish portion of the L.M.S.R., under the Railways Valuation Act, 1930, and with the extensive litigation thereafter on "let out" cases in Scotland arising under that Act. Mr. Wallace was appointed Solicitor (Scotland), L.M.S.R., in April, 1943, and in January, 1948, he became Solicitor (Scotland) to the Railway Executive. Since January 2, 1950, he has been Solicitor (Scotland) to the British Transport Commission.

We regret to record the death on January 30 of Mr. A. C. Eagle, M.B.E., who joined the South Eastern Railway in 1906 and had been Chief of the Superintendent of Operation's Freight Section, Southern Region, for the past five years. At the funeral, which took place at Surbiton Cemetery on February 5, approximately 80

He was born in 1913 and educated at Fettes and at Edinburgh University. He was admitted an Advocate in 1938. From 1940 to 1945 he served afloat in the R.N.V.R. in Europe, North Africa and America. He was appointed to be Interim Sheriff-Substitute at Dundee in January, 1946, and in October of the same year to be Sheriff-Substitute at Fort William. Mr. Cameron Miller has the distinction of having had none of his judgments, either civil or criminal, ever reversed by the appeal court, and his judgment in the test case of the Railway Executive v. McDonald (the first to be brought in Scotland under the 1947 Act) was affirmed by the Court of Session.

Mr. R. E. Mitchell has been appointed a Director of Metalastik Limited.

Mr. John Eaton, General Purchasing Agent of the Canadian Pacific Railway, has been elected President of the Canadian Railway Club for the ensuing year.

British Railways announce the appointment of Mr. H. Hoyle, Assistant to Operating Superintendent (Passenger Trains), Eastern & North Eastern Regions, Marylebone, as Assistant to Operating Superintendent (Freight Trains), Eastern & North Eastern Regions, Marylebone.



Mr. A. D. Cook

Treasurer, Southern Region, British Railways, who has retired



Mr. W. S. M. Stapleton

Appointed Treasurer, Southern Region, British Railways



Mr. G. J. Dickens

Appointed Development Officer, London Transport Executive

Mr. A. D. Cook, who, as recorded in our January 4 issue, has retired as Treasurer, Southern Region, British Railways, was educated at Addey Stanhope School and City of London College. He joined the S.E.C.R. in 1903, and after four years' training at London stations, was transferred to the Chief Cashier's Office. He was commissioned in the Railway Section of the Royal Engineers in the 1914-18 war, and served in France, Belgium and Germany; he attained the rank of Captain and was mentioned in despatches. In 1920 Mr. Cook was appointed Assistant to Chief Cashier, S.E.C.R., and was appointed Chief Pay Clerk of the Eastern and Central Sections, Southern Railway, at London Bridge in 1924. A year later he was placed in charge of Cash Receiving for the same sections and appointed Chief Pay Clerk and Cash Receiver. He was transferred to Waterloo in October, 1932, and appointed Chief Cashier, Southern Railway, which position he held until his appointment as Treasurer, Southern Region, in 1948. Mr. Cook has been associated with several of the staff clubs and friendly societies, for which he acted as Honorary Treasurer.

Mr. A. V. Nicolle and Mr. C. L. Woolveridge have been appointed Directors of Tecalemit Limited.

We regret to record the death, on February 7, at the age of 55, of Mr. Arthur Price, of the London office of Heatly & Gresham Limited. He was in charge of the Madras office of Heatly & Gresham Limited from 1923 until he returned to the head office in London in 1945. Cremation took place at the South London Crematorium on February 11.

M. Emile Lebacq retired last month after more than 30 years as Secretary General, Ateliers de Construction de Familleureux, Belgium. His first major post in the Belgian carriage and wagon industry was that of Commercial Manager of Ateliers de Seneffe, from which he resigned in 1919 when S.A. Familleureux was founded. Together with M. Paul Romain, he assisted in building up in a few years one of the most up to date carriage and wagon works on the Continent.

Mr. W. S. M. Stapleton, Registrar, London Bridge, Southern Region, who, as recorded in our January 4 issue, has been appointed Treasurer, Deepdene House, Dorking, entered the Secretary's Office of the L.B.S.C.R. in 1912, and during the 1914-18 war served with the London Rifle Brigade and Royal Irish Rifles. He joined the Secretary's Office of the Southern Railway on its incorporation in 1923, and, after serving in various capacities in that office was appointed Private Secretary to the Chairman in 1939. He was Acting Assistant Secretary to the company from April, 1944, to December, 1945, and in 1946 was appointed Registrar. On nationalisation he was responsible for the work of conversion of all the Southern Railway stocks into British Transport stock before the stockholders' accounts were finally transferred to the Bank of England towards the end of last year.

We regret to record the death on February 7, at the age of 81, of Mr. Dickson Burnie, formerly Managing Director of the Railway & General Engineering Co. Ltd.

Mr. W. George Kefford, previously London Manager of W. T. Glover & Co. Ltd., has now become a Partner in Ferguson & Palmer, London representatives of John Baker & Bessemer Limited, Peckett & Sons Ltd., and Woodhouse & Rixson Limited.

We regret to record the death, at the age of 64, of Mr. Frederick W. Mottley, European Freight Manager of the Canadian Pacific Railway. He joined the C.P.R. in London in 1907 as a clerk in the Traffic Department and was appointed Secretary to the European General Manager in 1910. In 1911 he was transferred to the subsidiary company, the Dominion Express, as chief clerk, becoming European Superintendent of the Express Company (now known as the Canadian Pacific Express) in 1919. He returned to the parent company in 1935, when he was appointed European Freight Manager. From 1940 to 1945, Mr. Mottley was acting European Manager for the C.P.R., during the absence of Mr. J. C. Patteson on war duties.

Mr. G. J. Dickens, A.M.Inst.T., who, as recorded in our January 11 issue, has been appointed Development Officer, London Transport Executive, is 53. He joined the London Electric Railway Company as a junior clerk in 1913 and during the 1914-18 war was a Flying Officer in the R.F.C. and the R.A.F. Mr. Dickens was transferred to the London General Omnibus Company as a traffic observer in 1926 and from 1930 to 1946 served in the Country Bus & Coach Department. He was appointed Acting Divisional Superintendent (North), Trams & Trolleybuses, in October, 1946, and became Divisional Superintendent in 1947. In 1950 Mr. Dickens was made Principal Development Assistant to the Development Officer, and on the retirement of the latter at the end of that year became responsible for the work of the Development office.

Chamberlain Industries Limited has announced the appointment of Mr. L. B. Smith as Manager of the Building Division. He has previously been acting as Personnel Assistant to Mr. L. F. Chamberlain, Director of Building Contracts.

Mr. Cecil J. Allen was recently presented with a fountain pen and a Bible to mark his retirement from the presidency of the Railway Service Christian Union. The presentation was made by Mr. J. Taylor Thomson, Civil Engineer, London Midland Region, British Railways, and President of the Union.

We regret to record the death on February 3, at the age of 51, of Mr. T. A. M. Roberts, Sales Director of the Metals Division of Imperial Chemical Industries Limited. After joining the Metals Division in 1916, he had become Metals Sales Manager in 1937 and was appointed to the Division Board in 1945. At the time of his death Mr. Roberts was Chairman of the Brass & Copper Tube Association and the Extruded Brass & Copper Alloys Association, and had held executive and advisory offices in the Cold Rolled Brass & Copper Association, the High Conductivity Copper Association and the Brass Wire Association. He was a member of the executive committee of the British Non-Ferrous Metals Federation.

B.T.C. Window Displays at Leicester Square Station

Statistics on commercial advertising sites available on the Commission's services



The offices of the Commercial Advertisement Division of the B.T.C., showing window displays on two frontages

The British Transport Commission has installed striking street-window displays in the newly reconstructed offices of its Commercial Advertisement Division at Cranbourn Chambers, Leicester Square Station, London, W.C.2.

A set of three displays on the Charing Cross Road frontage gives statistics of British Transport services on which important commercial advertising sites are available. In one of them it is explained that the 24,200 vehicles of London Transport and the Provincial and Scottish Bus Groups carried 6,166 million passengers in 1950.

The other displays give similar information for railway stations, and for road delivery vans operating in all parts of the country.

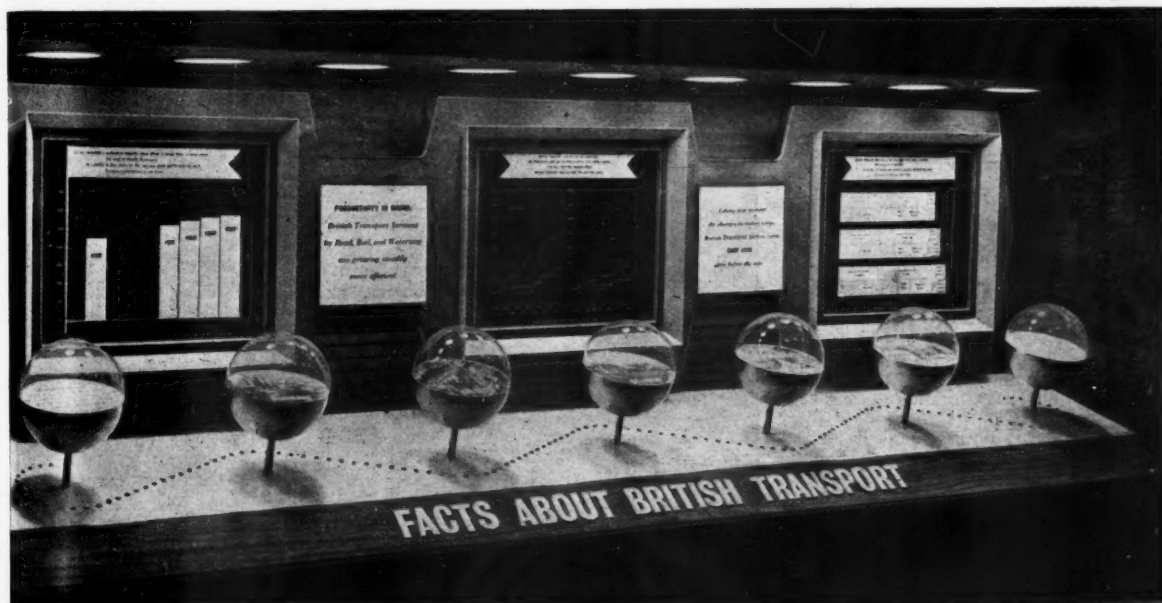
Typical statistical data extracted from the London Travel Survey, 1949, are given in the three adjacent displays in Cranbourn Street. They show the proportion of the population of the London area which makes regular journeys by public transport, the purpose for which the journeys are made, and how the journeys are divided between the services of London Transport. The underlying theme of all six displays is that accurate information on the "reader-

ship" of advertising on the vehicles and properties of British Transport is now being made increasingly available to advertisers.

A seventh display, arranged in a large corner window, shows in pictures the service which British Transport renders in the life of the community. A chart tells the financial story of the first three years of British Transport (1948-1950). Another shows the increases in wages costs and in some typical material costs since 1939 which have made it necessary for fares and charges to be increased. A third chart shows one among many examples of increased efficiency—the greatly improved use of locomotive time on British Railways in terms of ton miles per total engine hour "produced."

The window displays were produced for the Publicity Division of the B.T.C. by Design Research Unit. The three displays in Charing Cross Road were designed by Mr. Ronald Sandiford M.S.I.A., and the three displays in Cranbourn Street by Mr. Ronald Ingles, M.S.I.A.; the centre display was by Mr. Arthur Braven, A.R.I.B.A.

INTER-ALLIED RAILWAY CLUB REUNION IN PARIS.—The third annual gala and ball of the Foyer Interallié des Chemins de Fer, Paris, will be held on February 29 in the premises of the Aéro-Club, Paris, from 10 p.m. to dawn. Last year's gala, which was a great success, was described in our issue of March 30. To mark the international character of the club and the co-operation in developing the European transport system among railwaymen of many countries, who it is hoped will be present, the reunion this year will be known as "La Nuit Européenne de la Locomotive '52'." The price of tickets of admission is 700 francs, and of champagne supper (from 12.30 a.m.) 1,000 francs; in addition, refreshments will be obtainable throughout the evening. It is hoped to arrange a tombola besides the usual attractions. Admission tickets and further particulars may be obtained from the Foyer Interallié des Chemins de Fer, 11, Rue de Milan, Paris, 9e.



"Facts about British Transport" display

Summer Services in Argentina

Many additional trains on five of the principal systems, including Buenos Aires suburban lines

The last of the new summer services in Argentina came into force on January 14. The principal features are as follows:

General San Martín Railway.—The international train "El Libertador" will continue to run twice weekly. Passengers for Chile will also have another weekly service involving a stopover at Mendoza. Mendoza and San Juan will also be served by the day expresses "El Cuyano" and "El Sanjuanino," the first running daily and the second weekly. The sleeping car train "El Zonda" will run twice weekly. To San Rafael, there is the sleeping car train "El Nihuil" twice weekly and the day train "El Sur Andino" once weekly from Rufino, connecting with "El Cuyano" from Buenos Aires and the General Mitre Railway from Rosario. The "El Cuyano" has a connection with the D. F. Sarmiento Railway over the new line to Colonia Alvear (D.F.S.).

The Córdoba Hill district has the day express "El Champaquí" and the sleeping car train "El Sierras Grandes" each running three times weekly. The service to Achiras, where the railway runs a holiday camp, has been increased by five connections a week to and from Buenos Aires, and a week-end service to and from Río Cuarto and Villa Mercedes. In the Cuyo district a number of steam trains has been replaced by diesel services, new rolling stock having been introduced on the services between Mendoza, San Rafael, and Colonia Alvear (D.F.S.).

General Mitre Railway.—The services to and from Santiago del Estero and Tucumán continue to be run by the air-conditioned "El Tucumano" twice weekly, the sleeping car express "Estrella del Norte" also twice weekly, and a stopping train with sleeping cars five times a week. To Córdoba, Alta Gracia and the hill district there are daily services by the sleeping car express "Rayo de Sol," the day express "El Serrano," the night express "El Serranoché" with first and second class coaches and sleeping cars, and a stopping train from Rosario. Connections are made in Córdoba with the General Belgrano diesel train "El Capillense" for hill stations.

Santa Fé has the night express "El Santafesino" six times a week, a stopping train from Rosario also six times a week, and a daily diesel-car connection in Rosario with the express "El Rosarino" from Buenos Aires. Between Buenos Aires and Rosario there are daily express services with "El Porteño," "El Criollo," "El Rosario" and "El Santafesino," with an additional express "El Vespertino" on Saturdays and a daily stopping train. To Río Cuarto there are three steam trains a week via Venado Tuerto and three via Corral de Bustos, with the diesel train "El Gaucho" once a week via Venado Tuerto and once via Corral de Bustos. On the Buenos Aires local section, the shuttle service between Borges and Delta is eliminated for the summer season, most trains running direct between President Perón and Delta.

General Roca Railway.—The principal innovation on this railway is an increase of 140 trains daily on the Buenos Aires suburban section and the elimination in most cases of the necessity to change trains in Temperley for passengers travelling to Ministro Pistarini and Florencio Varela.

Mar del Plata is served by two expresses daily and three more six days a week, including the air-conditioned "El Marplatense," Necochea has four night trains, a week-end day express and the diesel express "El Huemul" three times weekly.

To Bariloche there is a daily sleeping car express and a stopping train three times a week. Bahía Blanca has three sleeping car trains and five day trains a week, and Zapala a daily service. Over the new branch to the seaside resort of Pinamar there is a service six days a week in connection with the Buenos Aires-Mar del Plata expresses. To Tandil there are ten day trains per week and a week-end express as well as three sleeping car trains per week.

General Belgrano Railway.—The international train "El Panamericano" to Bolivia and Perú continues to run weekly.

To La Quiaca, there are now four services per week instead of three as formerly. Tucumán has a daily service via Córdoba and four trains a week via Santa Fé. Córdoba has ten direct trains per week. The service to Resistencia is maintained by eleven trains per week and to Catamarca there are six per week. The increase in the number of passengers on the Buenos Aires suburban section has made it necessary to run six-coach trains hauled by diesel-electric locomotives.

General Urquiza Railway.—The international train "El Guaraní" runs to Asunción once weekly and to Posadas three times a week. "El Gran Capitán" also runs to Posadas three times weekly. For both these trains, passengers from Buenos Aires travel by river boat to Puerto del Uruguay, where they transfer to the railway. "El Correntino" to Corrientes and "El Entrerriano" to Concordia both run three times a week; the latter is the only passenger train to use the ferryboat route from Zárate to Ibicuy.

D.F. Sarmiento Railway.—On "this line there are no major alterations.

Cleaning Underground Railway Telephone Wires

London Transport signal engineers have devised a new method of cleaning the two telephone wires which run alongside every underground track and provide the means by which train crews can cut off traction current in an emergency as well as communicate with substation or traffic controller. The cleaning of these wires, which is therefore of great importance, has hitherto been carried out by hand, mainly with emery cloth; the new method involves the use of power-driven brushes.

Two wire brushes, of 6 in. or 8 in. dia., mounted on parallel shafts about 1 ft. apart and driven by separate electric motors, form a unit which is free to pivot in a vertical plane about the end of a long rod. This rod is connected through a universal joint to an arm which pivots horizontally about a vertical column mounted in the centre of a ballast wagon, suitably modified. Two wagons have been so

equipped that the two wires can be dealt with simultaneously; they form a short train with a battery locomotive which also supplies power for the motors.

The train carries a crew of six—driver, supervisor, one man to remove the protective grease from the wires, two to operate the brushes and a fourth to regrease the wires after cleaning.

At present the use of the apparatus is restricted as it is not able to deal with the low position of the telephone wires on some lines. In view of the results so far achieved, it is hoped to adapt a flat wagon which, with its low floor, will permit the apparatus to be so mounted that it can be raised or lowered to suit the height of the wires to be cleaned. The advantages of the new method include a considerable reduction in man-hours per mile of wire cleaned as well as improved cleaning efficacy.



Wires in London Transport tunnel being cleaned by equipment mounted on ballast wagons

Mr. John Elliot's Visit to North Eastern Region

Mr. John Elliot, Chairman, the Railway Executive, made an inspection of parts of the North Eastern Region on February 4 and 5, visiting York, Tees-side and Tyneside. Throughout the tour he was accompanied by Mr. H. A. Short, Chief Regional Officer, North Eastern Region, and Regional departmental officers.

On his arrival at York Mr. Elliot inspected the new signalling installations and afterwards the station and enquiry office. On the next day he travelled via Thirsk, Northallerton, and Picton to Newport, where he inspected the marshalling yard and motive power depot. He then visited Middlesbrough Station and Motive Power Depot and discussed plans for its future, afterwards going on to view industrial development on Tees-side.

Later he met the Chairman and members of the Tyne Improvement Commission and saw the new work in connection with the ore-discharging scheme at Tyne Dock, for which British Railways are building a special fleet of 56-ton side-discharge wagons for conveying iron-ore to the steel works at Consett. From there Mr. Elliot went by T.I.C. launch up the Tyne to Newcastle Quay. On arrival at Newcastle Central he made an inspection of the railway premises there, and commented on schemes for modernisation of the signalling installation.

During the tour Mr. Elliot met many District Officers and representatives of the staff, and had interesting talks with some of the Local Departmental Committees, discussing with them proposals for new works which are under consideration at present.

Permanent Way Films

A selection of films from a new series intended for British Railways civil engineering staff was shown to the technical Press at Film House, Wardour Street, W.1, on February 8. This series of instructional films on various aspects of permanent way work has been arranged with the Films Section of the British Transport Commission by the Railway Executive, so that staff on permanent way maintenance will be able to get the best use from the modern equipment at their disposal.

Of the first five films in this series completed recently, three have been made by British Transport Films and two by World Wide Pictures. During 1952 they will be shown to railway engineering staff all over the country, and to enable staff in outlying districts to see the films with minimum loss of time, a year's tour has been arranged for a 60-seater travelling cinema coach, which carries its own generating equipment. Usually the film performances will be supervised by a technical instructor who will answer questions and stimulate discussion.

The films shown on Friday, February 8, were:—

The Hallade Track Recorder. (Made by World Wide Pictures in association with British Transport Films.) 13 min., monochrome, sound.—A film to tell lengthmen and gangers how the Hallade track recorder makes a continuous record of the movements of a train during a journey, and so shows up the good places and the bad places in the track.

Day-to-Day Track Maintenance—Plain Line. 31 min., monochrome, sound.—A

film giving instruction in the normal maintenance tasks which have to be performed by lengthmen. It shows how all types of fastenings on both bull-head and flat-bottom track are maintained; details the maintenance of rail joints; shows how hanging sleepers are to be repacked, and deals with the preservation of correct cant and alignment on curves.

Day-to-Day Track Maintenance—Switches and Crossings. 22 min., monochrome, sound.—Continuing the study of the normal tasks performed by a gang, this film deals with the maintenance of switches, common and obtuse crossings, and switch diamonds.

A Mechanical Rail Creep Adjuster. (Made by World Wide Pictures in association with British Transport Films.) 17 min., monochrome, sound.—This film shows in some detail the adjustment of rail creep on a section of line where some expansion gaps have closed up, or opened out, too much. A mechanical device, the creep adjuster, is used to correct all rail creep. This is a horizontal screw jack, which can be attached to the rail at a joint, and can push or pull several hundred yards of track at a time.

Track Buckling and its Prevention. 16 min., monochrome, sound.—The expansion of rails in hot weather may cause buckling of the track unless proper maintenance is carried out. Buckling may result from rail creep, seized fishplates, lack of proper ballast, or bad sleeper packing. This film shows what precautions must be taken and what maintenance must be carried out to stop all risk of track buckling.

An Irish Railwaymen's Union

The National Union of Railwaymen will cease to function in Ireland from January 1, 1953. On that day a new all-Ireland union will come into operation. The decision to set up the new union was taken at the annual general meeting of the N.U.R. in London last year, when it was decided that the 9,000 Irish members should be helped to establish their own organisation. Eighty delegates representing every branch in Northern Ireland and the Republic met in Dublin on February 7 to settle essential questions. Mr. H. W. Franklin, President of the N.U.R. presided, and Mr. J. B. Figgins, General Secretary, and members of the National Executive were present.

After the meeting a statement was issued which said that there was complete unanimity on all points, and leading trade union representatives from north and south expressed earnest hopes for success when the new union was finally in operation. The members of the National Executive and Messrs. Franklin and Figgins expressed themselves well satisfied with the results of the conference. Another conference will be convened by the delegates about the beginning of June, when it is hoped to announce the election of Trustees, and the names of the General Secretary and the President of the new Union.

The N.U.R. has agreed to give the general secretary of the new Union a six-month's training course in administration, in London. He will be paid salary and expenses by the N.U.R. during the period of his training. All candidates for the new position will have to sit for an examination prepared by the N.U.R. and held in Dublin. Only the names of those who pass the test will go on the ballot paper for election. The position will be confined

to working railwaymen in Ireland. After the legal details of the financial aspect of the change-over have been settled the N.U.R. will hand over a sum of money, yet to be decided, to the Irish union.

The first organisation of railwaymen in Ireland was the Amalgamated Society of Railway Servants, the first branch of which was formed in Dublin in 1885. This was re-organised into the National Union of Railwaymen in 1913 when that body was set up in Britain. Of the present day membership in Great Britain and Ireland of 409,000, the N.U.R. had an Irish membership of 9,000.

Amersfoort-Zwolle Section Electrified

The electrification of the section between Amersfoort and Zwolle has added a further 42 track-miles to the electrified system of the Netherlands Railways. When in May next the Zwolle-Groningen and Meppel-Leeuwarden lines are electrically worked the mileage electrified will be 786, or approximately 40 per cent. of the whole system.

The first foundation block for the gantries on the Amersfoort-Zwolle line was placed on June 6, 1950. The overhead structures on the open line are the same type as those on the Twente line—masts and cross-bars of pre-stressed re-inforced concrete. Where the overhead wire had to be tensioned, steel gantries were used. Most of the foundation blocks were made in the open-air concrete factory at Oldebroek. They, and the masts and cross-bars, were placed in position by crane. Some 2,472 pre-fabricated concrete foundation blocks were required. The number of masts erected was 2,732.

Power Supply

The 10,000 volts a.c. supplied by two district power stations is converted into 1,500 volts d.c. in substations at Putten, Hulshorst, Oldebroek, and Zwolle. A number of sectioning cabins is provided to ensure maximum protection of the distribution systems and the lowest possible voltage drop in the overhead line. The newly-electrified section is controlled from Zwolle by remote supervisory apparatus with telephone-type selectors and relays. The signalling has been changed to automatic block with daylight signals.

The electrification has required alterations to stations. At Zwolle platforms have been raised, a subway driven between Nos. 1 and 2 platforms, and a new exit made. In front of Zwolle Station the municipal authorities have laid out a new square for which the railways have narrowed the platform which is served by Emmen line trains.

Behind the former workshops at Zwolle a double track has been laid to enable goods trains from the north, east, and south to reach the yards direct without using passenger lines. At Nijkerk, Putten, Hulshorst, Oldebroek, and Wezep also platforms were raised.

At Amersfoort a bay was added to No. 2 platform for the slow passenger trains to and from Amsterdam. At Harderwijk the layout of the yards was altered and a sharp curve realigned to permit higher speeds. At Oldebroek two new sidings were provided.

The timings of fast trains between Amersfoort and Zwolle have now been reduced by 8 to 9 min. to 42 min. Slow trains between Amersfoort-Zwolle which formerly took 80-82 min. now take only

67 min. The increased service enables good connections to be made at Zwolle from the intermediate stations between Amersfoort and Zwolle, for the Groningen and Leeuwarden lines.

Ulster Transport Inquiry

It has been announced by the Chairman of the Northern Ireland Transport Tribunal, Sir Anthony Babington, that the inquiry into transport and its administration in Northern Ireland will open and the hearing of evidence will begin on March 25. The inquiry will be in three stages, covering, first, the U.T.A.; secondly, area and individual cases; and thirdly, the position of the U.T.A. under the Transport Act of 1948. If a detailed inquiry into any branch of the U.T.A. were considered necessary, the Tribunal would not hesitate so to direct.

The Tribunal will sit from Monday to Thursday in each week until April 8 when a break will be made for the Easter recess. By that time it is hoped that good progress will be made. All parties wishing to give evidence are expected to submit their cases to the Secretary of the Tribunal before March 1. Among those submitting evidence are the Association of County Councils, and rural and urban district councils.

In the first part of the inquiry, the U.T.A. will be called on to justify the manner in which it has carried out its work under the 1948 Act, and to face cross-examination on facts and figures. In the second stage the cases of individuals and areas will be dealt with in relation to the effect of transport on some trades or enterprises.

To enable the Tribunal to gain a more direct knowledge of the Ulster Transport Authority, its other two members, Mr. M. P. Sinclair and Mr. R. G. Manson, have spent some weeks inspecting the organisation and records of the Authority in Linenhall Street and Duncree Street, Belfast, and in provincial depots.

Staff & Labour Matters

Railway Shopmen's Wage Claim

Further comment on the differences between the Confederation of Shipbuilding & Engineering Unions and the N.U.R. over the claim for railway shopmen is made in an article in the N.U.R. official organ, *The Railway Review*, of February 8.

It is contended that 85,000 shopmen are N.U.R. members and that the C.S.E.U. represents only a third of that number, and that as the N.U.R. has indicated its acceptance of the offer of the Railway Executive to increase shopmen's wages by 8 per cent., the N.U.R. cannot be expected to have imposed upon it the will of a body whose members concerned are in the minority.

At least 95 per cent. of the shopmen, it is stated, desire the Railway Executive offer to be accepted and applied, and it is suggested that if the Railway Executive were to apply the proposed increases, despite the official opposition, such a step would be welcomed by the men in the shops and sheds.

The article shows that the Railway Executive offer meant an increase of 9s. 6d. a week for craftsmen and 8s. for the bottom grades, with proportionate increases for intermediate grades, women, and juniors. The point of difference is that the C.S.E.U. is demanding a further

1s. a week for craftsmen and 6d. for men in Groups 1 and 3.

There is the question what value the 1s. or 6d. would have compared with the possibility, if the claim goes to arbitration, of losing back payment of the 9s. 6d., and so on, from September 3, 1951, which was the date the 8 per cent. increase applied in the case of other railway staff. Also, as time goes on, further claims can be made for other sections of staff because of the rising cost of living.

At the present time the Minister's decision is awaited on the C.S.E.U. request that the matter be referred to arbitration.

Port Transport Dispute

The Minister of Labour & National Service has appointed a board of arbitration under the Industrial Courts Act, 1919, to decide on the claim of the workers' side of the National Joint Council of the Port Transport Industry. The claim is for increases in day and piece rates, an increase in the annual holiday with pay from one to two weeks, and an increase in attendance money and the guaranteed fall back.

Sir John Forster will be Chairman of the arbitration board, assisted by Sir Luke Fawcett and Mr. Herbert Parkes.

Questions in Parliament

Wage Increases

The Earl of Cork & Orrery in the House of Lords on February 5 asked His Majesty's Government (a) What had been the percentage rise in the wages of miners, dockers, railwaymen, and those employed in the transport industry during the five years January 1, 1947, to January 1, 1952; and (b) what had been the percentage rise during the same period in the pensions and allowances granted to the dependants of those who were killed or dead on active service, and to the totally disabled as the result of war injuries.

The Marquess of Salisbury (Lord Privy Seal): The estimated rise in the full-time weekly rates of wages of miners, dockers, railwaymen, and transport workers, during the five years from January 1, 1947, to January 1, 1952, was approximately 23 per cent. The rise in the average amount of pension and allowances paid by the Ministry of Pensions to widows and their children was approximately five per cent.; for other dependants (parents, and so on) the increase was approximately 14 per cent. It is regretted that a percentage figure for totally disabled war pensioners is not available.

The Earl of Cork & Orrery then drew attention to the meagreness of war pensions, and asked whether the Government would consider introducing supplementary allowances, to be paid in excess of the basic pensions, so that the pensions would always remain in the same relative position to the cost of living as when they were granted.

The Marquess of Salisbury replied that a review was being undertaken of the whole question of pensions.

Transport Appointments

Major Peter Roberts (Heeley, Sheffield—Nat. Lib.-Con.) on February 4 asked the Minister of Transport how many appointments had been made, part-time and full-time, to the B.T.C., Railway, London Transport, Road Haulage, and Road Passenger Executives, and how far the annual cost of salaries and expenses of these appointments exceeded £60,000.

Mr. J. S. Maclay in a written answer

stated: Particulars of these appointments including the salaries attaching to them are given in a White Paper "Public Boards" issued last December. The salaries amount to £120,000 a year. In addition, a maximum of £4,000 a year is allowed for the entertainment expenses of members of the B.T.C. and the Executives as a whole. The amount actually expended under this head in 1950 was £2,231. This figure does not include normal travelling and subsistence paid in respect of business journeys.

Machine Tools

Mr. Harold Davies (Leek—Lab.) on February 4 asked the Minister of Supply how many firms in the United Kingdom produced machine tools; and if he would state the number of workers in those firms.

Mr. Durcan Sandys in a written answer stated: Metalworking machine tools are produced by approximately 350 firms in the United Kingdom, with a labour force of about 40,000.

Coal Wagons

Mr. A. Edward Davies (North Stoke-on-Trent—Lab.) on February 4 asked the Minister of Fuel & Power to what extent coal distribution had been held up this winter or coal production impeded because of wagon shortage; and what action had been taken to effect improvement.

Mr. Geoffrey Lloyd: So far, practically not at all.

Sir Waldron Smithers (Orpington—C.): Is not it a fact that when two nationalised industries take a hand, confusion becomes worse confounded?

Mr. Lloyd: In this case there is admirable co-operation between the National Coal Board and the railways.

NEW TYPE OF GOODS SHED IN U.S.A.—An unusual new freighthouse or goods shed constructed by the Missouri Pacific Railroad to St. Louis was opened on January 2. The continuous roofing covers an area of about five acres, and the cost of the shed was some £620,000. In cross-section there are five bays; the centre bay, 105 ft. wide, covers two 30-ft. transit platforms with four tracks between them; then, one on each side, two 57-ft. bays over four more tracks; and beyond them again two 46 ft. 6 in. bays over "inwards" and "outwards" "rail-to-road transit platforms." A special feature is the use of rigid-frame unbraced steel roof spans integral with the supporting columns; corrugated Transite asbestos-cement is used for the roofing and side sheeting, and is stud-welded to the steel members. Eight of the tracks are dead-ends, and there is access to the transit platforms behind the bufferstops, but cross-over bridges—retractable under the platforms—are also provided for communication at intermediate points. The surface of the concrete platform floors are faced with a metallic hardener to minimise wear and dust. As the structure was built on fill, the concrete foundation footings are supported by 1,680 creosoted timber piles. At the open end of the shed, over the tracks, and along both the "inwards" and "outwards" sides of it, there are almost continuous lines of steel overhead-rolling doors numbering 127 in all. Those over the tracks at the end are larger and of the hanger type, and are motor-worked by push-button control. Equipment includes 62 three-wheel rubber-tyre 2,000-lb. platform trucks, eleven fork-lift trucks, and one 6,000-lb. portable crane. Just outside the shed, a gantry crane is installed on the uncovered part of the inwards platform for handling heavy consignments.

Contracts & Tenders

The Rhodesia Railways have placed the following contracts:—

Charles Roberts & Co. Ltd.: 75 bogie petrol tank wagons.

Hurst, Nelson & Co. Ltd.: 30 bogie fuel-oil tank wagons.

Unlike other recent tank wagons for Rhodesia Railways, which are of 7,000 gal. capacity, the new wagons will have 8,000 gal. tanks.

The London Midland Region of British Railways has recently placed the following contracts:—

L. Fairclough Limited, Adlington: restoration of a culvert at Colwyn Bay.

Rosser & Russell Limited, London W.1: steam heating and hot water service to laundry and amenity buildings and steam supply to kitchen at Willesden new carriage shed.

Henry Hope & Sons Ltd., Smethwick: renewal of the roof covering at Blackburn Station with patent glazing.

Fletcher & Co. (Contractors) Ltd., Mansfield: reconstruction of the superstructure in pre-stressed concrete of bridge No. 17 at Bulwell Station on the Nottingham and Mansfield line.

A Board of Trade Special Register Information Service report states that the Belgian State Railways have issued a call for tenders (No. 2652/470) for the supply of electro-mechanical signalling equipment. Tenders should reach the Societe Nationale des Chemins de Fer Belges, Direction du Materiel et des Achats, Brussels, before February 27.

A copy of the tender documents in French is available for inspection by representatives of United Kingdom manufacturers at the Board of Trade Commercial Relations & Exports Department, S.W.1. A second copy is available for loan to United Kingdom manufacturers in order of written application to the Department.

The Board of Trade, Commercial Relations & Exports Department, Special Register Information Service, states that the Secretariat of Transport & Public Works of the State of Sao Paulo has issued a call for tenders for the supply of diesel-electric locomotives and various types of wagons to the Sorocabana Railway, Brazil. The equipment required is as follows:—

- 25 diesel-electric locomotives
- 20 electric train sets
- 1,000 closed metal goods wagons
- 300 cattle trucks
- 100 special wagons for carrying ballast
- 300 open flat wagons
- 200 high-side wagons

Tenders should be addressed to the Divisao de Compras de Departamento do Material, Estrada de Ferro Sorocabana, Edificio Central da Estrada de Ferro Sorocabana, Alameda Cleveland, Sao Paulo, and reach there before 2 p.m. on March 17. A copy of the tender documents in Portuguese and a summary in English are available for inspection by representatives of United Kingdom manufacturers at the Commercial Relations & Exports Department, Board of Trade. Standards and specifications may be obtained from the Purchasing Division of the Railway.

According to a further report from the Board of Trade Special Register Information Service, the Central Uruguay Railway has issued a call for tender (C.M. 184) for

steel rims and axles for locomotives, coaches and wagons. Tenders should reach the Administracion del Ferrocarril Central del Uruguay, Ciudad, Uruguay, before March 18.

A copy of the specification in Spanish and drawings is available for inspection by representatives of United Kingdom manufacturers at the Board of Trade, Commercial Relations & Exports Department. A second copy is available for loan to United Kingdom manufacturers in order of written application to the Department. Reference CRE/4616/52 should be quoted.

A paragraph in our February 8 issue stating that a call for tenders for narrow-gauge steel bogie wagons had been issued by the South African Railways, referred to the possibility of obtaining tender forms from the South African High Commissioner, South Africa House, London. We now understand that the forms may not be obtained from the Office of the High Commissioner, though they may be inspected there.

The closing date of the call for tenders (No. 857) issued by the Rio Grande do Sul State Railway, Brazil, for various types of railway equipment is reported to have been extended from February 14 to April 17, in a recent statement from the Board of Trade Special Register Information Service. Reference to the tender previously was made in our November 9, 1951, issue.

Last London Transport "Brown" Polarised d.c. Track Relay

When the District Railway was electrified in 1905 complete power signalling was installed, utilising the fourth rail traction system. The track circuits were d.c. operated, each track circuit being provided with two polarised relays.

The system of using two polarised relays to prevent interference between traction current and track circuits had been evolved by the late Mr. H. G. Brown, when employed on the Elevated Railway in Boston, U.S.A. Mr. Brown, who became Managing Director of the Westinghouse Brake & Signal Co. Ltd., introduced this system of signalling throughout the District Railway, and during the succeeding few years the same system was adopted for the newly-constructed Piccadilly, Bakerloo and Hampstead tube lines.

The first experimental relays were of the 4-coil type, but a new design of 3-coil polarised relay was produced by Mr. Brown for the general installation of power signalling. These track circuits operated very satisfactorily and continued in use for many years. It was not until the late 1920's that a programme of replacement of the polarised d.c. track circuits by the more modern a.c. track circuits was inaugurated. Since that time the programme of modernisation of track circuits has gone forward steadily, and with the re-equipment of the Whitechapel signal cabin with a.c. track circuits and colour-light signals on November 17, 1951, the last "Brown" d.c. relays were removed from service, after having been in use for 46 years; it is interesting to note that they have operated signals to the extent of approximately four million train movements for each track circuit.

On February 9 Mr. R. Dell, Signal Engineer, London Transport Executive, by

courtesy of Mr. P. Croom-Johnson, the Chief Engineer, presented to Mr. Donald Brown, son of the late Mr. H. G. Brown and the present Managing Director of the Westinghouse Brake & Signal Co. Ltd., one of the last relays removed from Whitechapel. An inscription thereon reads:—

POLARISED DIRECT CURRENT TRACK RELAY

Specially designed by H. G. BROWN, Managing Director of the Westinghouse Brake & Signal Co. Ltd., for track circuits on the electrified lines of the London underground railway.

Relays of this type were in continuous service from the date of the electrification of the line in 1905.

This relay was one of the last batch in service for the signalling of passenger trains and was in use at Whitechapel on the District Line.

Taken out of service on November 17, 1951.

Notes and News

Vacancy with London Transport.—Applications are invited for the post of assistant, Technical Investigation Section, London Transport. See Official Notices on page 195.

Alterations to Eastern Region.—On February 4 many trains were reinstated and improvements were made to existing services on the Great Northern suburban service of the Eastern Region.

Mechanical Design Engineer Required.—A senior mechanical design engineer is required by a firm manufacturing diesel-electric locomotives as assistant to the chief mechanical designer. See Official Notices on page 195.

Vacancy for a Chief Accountant and Company Secretary.—Applications are invited for the post of chief accountant and company secretary required by an independently owned departmental store. See Official Notices on page 195.

United Railways of Havana.—At a general meeting of the National Association of Sugar Mill Owners in Havana on February 6, it was agreed to recommend members of the association to purchase the British-owned United Railways of the Havana & Regla Warehouses Limited.

Railway Students' Association.—Mr. Frank Gilbert, Principal Staff Officer, British Transport Commission, will read a paper on "Training for Transport" at a meeting of the Railway Students' Association, to be held at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, on Wednesday, February 27, at 6 p.m.

Western Region, London Lecture & Debating Society.—At a meeting of British Railways, Western Region, London Lecture & Debating Society, to be held in the Clerks' Dining Club, Bishops Bridge Road, W.2, at 5.45 p.m. on Thursday, February 28, Mr. H. E. B. Cavanagh, Architect, Western Region, will read a paper on "Railway Architecture."

Funeral Train of King George VI.—The train which conveyed the body of the late King George VI from Wolferton to Kings Cross on February 11 was hauled as far as Kings Lynn by "Sandrineham" Class locomotive *Ford Castle*. From there to London the locomotive was No. 70000

Britannia, the first of the Class "7" standard, British Railways Pacifics. The train was composed of five saloons, four vans, and a restaurant car. It left Wolverton at 12.5 p.m. and reached Kings Cross at 2.45 p.m. The same stock is being used today (Friday) on the journey from Paddington to Windsor, and Western Region locomotive No. 4082, *Windsor Castle*, which hauled the funeral train of King George V, is hauling the train.

Increase in Iron and Steel Output.—The British Iron & Steel Federation announces that production of steel ingots and castings in January was at an annual rate of 15,234,000 tons, compared with 14,953,000 tons in December and 15,907,000 tons in January, 1951. Output of pig iron was at an annual rate of 10,319,000 tons (10,281,000 tons in December and 9,520,000 tons in January, 1951).

B.T.C. Telegram of Sympathy to the Queen.—The following telegram was dispatched to Queen Elizabeth by the British Transport Commission: "The British Transport Commission present their humble duty to Your Majesty and, on behalf of all branches of their organisation, beg to express their profound sympathy with Your Majesty and with the Royal Family in the grievous loss of our beloved King. (signed) Hurcomb, Chairman."

Magyar Melody.—On February 7 at the Scala Theatre, London, the London Midland Region (London) Amateur Musical Society presented "Magyar Melody," by Eric Maschwitz and George Posford. This colourful musical show was admirably presented, the principal parts of Roszi and Michael being excellently portrayed by Miss Sheila Goulding and Mr. William Taylor. Miss Jessie Wilson made an appealing Julika, while Miss Margaret Collis combined dignity with charm as the Empress. Mr. Reginald Brockwell, Mr. Frederick Watkins and Mr. William Southern were well cast as Mikki, Count Ferenc and Bardos and set high standards of performance which were well main-

tained by the excellent supporting cast. Choreography was in the capable hands of Miss Mona Rowson, who provided most attractive ballet sequences; music with a tzigane lilt was directed by Mr. Charles Brill. The success of the evening also must be attributed to the army of workers behind the scenes, whose efforts were so visible in the smooth running of the production.

Further Redundancy at Derby Carriage & Wagon Works.—The increasing effect of cuts in steel allocations has resulted in the redundancy of 109 men at Derby Carriage & Wagon Works in addition to those already discharged, to whom reference was made in last week's issue. The locomotive works staff at present is not affected by the steel shortage.

British Transport Commission Statistics.—The price of *Transport Statistics*, published every four weeks by the British Transport Commission, is to be raised from 1s. to 2s. 6d. a copy commencing with the first issue for 1952 dealing with Period 1, the four weeks to January 28. The annual subscription for the thirteen issues in the year will be raised from 12s. 6d. to 30s. including postage.

British Railways Coal and Steel Carrying.—British Railways cleared 372,120 tons of coal from deep-mine pits and opencast sites during the 48 hr. ended 8 a.m. on February 11, against 400,200 tons for the previous weekend. The total for the week was 3,142,180 tons, against 3,106,200. During the week ended February 2, 211,327 tons of iron and steel were conveyed from the principal steelworks.

Rhodesia Railways Trust Limited.—The annual general meeting of the Rhodesia Railways Trust Limited was held in London on February 7, Mr. C. Hely-Hutchinson presiding in the absence through indisposition of the Chairman, Sir Dougal O. Malcolm. Gross income, at £231,133, was greater by about £22,580 than that of the previous year, but the

charge for taxation, at £112,125, was greater by £17,373. The net profit was £107,371, compared with £102,292. A dividend of 9 per cent., less income tax, was approved, which would raise the balance of unappropriated profits carried forward to £89,881. Holdings of British and Dominion Government securities were further reduced during the year and now stood at about £877,000. The total of cash and debtors had increased to £303,067, largely as a result of the sale for cash of the Trust's interest in the Shabani Railway.

G.E.C. £6,000,000 Issue.—The General Electric Co. Ltd. is to raise £5,960,000. It is issuing 1,679,348 new ordinary £1 shares at 72s. 6d. each to the present ordinary stockholders. The ratio is two new for every five held. The directors disclose that results for the first nine months of the current financial year have been satisfactory, but warn that the recent increase in the cost of labour and world shortages of raw materials are bound to make themselves felt. They nevertheless forecast the maintenance of the 2½ per cent. dividend rate on the increased ordinary capital, and declare a 7½ per cent. interim.

Best-Kept Stations in Ulster.—Whiteabbey Station, on the former N.C.C. line, and Queens Quay Station, the Belfast terminus of the former B.C.D.R., have tied for first prize in the annual competition of the U.T.A. for the best-kept stations and halts on the system. Cash prizes up to £10 (to be divided among the staffs of the winning stations) were presented recently to the stationmasters by Mr. J. W. Hutton, Chief Traffic Manager, at a ceremony at the U.T.A. headquarters in Linenhall Street, Belfast.

Re-roofing at Euston.—The latest development in the improvements being carried out at Euston Station is the re-roofing over platforms No. 6 (the oldest main-line platform in London) and Nos. 8, 9 and 10 (departure point for the York Mail train in the 1840s). Most of the work on No. 6 platform has been completed. It has required 550 sq. yd. of glazing. The work on Nos. 8, 9 and 10 platforms has just begun. It involves removal of all the existing covering and its replacement by large section corrugated asbestos sheeting and patent glazing.

Leyland Motors Limited Agents in South America.—Leyland Motors Limited has appointed new agents for Uruguay and southern Brazil. In future Leyland sales and service will be handled in Uruguay by Corporacion Automotriz S.A., which trades under the name of Corausa at Colonia 2249, Montevideo. Sociedade Anonima Mercantil, of Sao Paulo, have been appointed Leyland agents for the south of Brazil: its offices are at Praca da Republica 309, 90 Andar-Sala 909. Leyland sales and service for the northern part of the country will remain with Goodwin Coccoza S.A. of Rio de Janeiro.

Institute of Transport, Northern Ireland Section, Dinner.—What the transport industry needed most to serve the community best was a settled political framework, and the minimum interference from political quarters, said Mr. A. B. B. Valentine, President, in responding to the toast of "The Institute" at the annual dinner of the Northern Ireland section of the Institute of Transport at the Midland Hotel, Belfast, on February 1. In the present economic crisis cuts in expenditure had to be made, and Governments might

Rolling Stock for Saudi Arabia



Inspection at the Pressed Steel Car Company's works at Hegewisch, Illinois, of Uricel-type van for the Saudi Arabian Railway

OFFICIAL NOTICES

SENIOR & Junior design engineers and draughtsmen required in London for work on the electrical and mechanical design of traction motors, generators, and control equipment for diesel electric locomotives. Men with first class experience in traction work are required for the senior posts. Good salaries will be paid, and there is a generous staff assurance scheme. Please apply with full details of training, experience, age, etc., to Box 369, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

A SENIOR mechanical design engineer is required by a Company manufacturing diesel-electric locomotives as Assistant to the Chief Mechanical Designer. Applicants should preferably have wide experience of either bogie, underframe or superstructure design, and the application of welding technique to this class of work. A first class electric locomotive or coach designer is envisaged as being the most suitable, but applications will also be considered from men without previous rolling stock experience whose qualifications and training are suitable. Write giving particulars of age, experience, qualifications and salary required to Box 396, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

JUST PUBLISHED.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

DRAUGHTSMAN required, preferably with Steel Car or Diesel Rail Car experience. 5-day week. Pension Scheme in operation. Apply—GLOUCESTER RAILWAY CARRIAGE & WAGON COMPANY, Gloucester.

DESIGNER/DRAUGHTSMAN required for Railway Rolling Stock Manufacturers in South Wales. Good prospects for man with extensive experience in this class of work. Please give fullest details of age, experience and salary required, etc.—Box 385, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

THE PERUVIAN CORPORATION LIMITED—CIVIL ENGINEERING DRAUGHTSMAN for Southern Railway of Peru, age 25 to 30. Knowledge of instrument work, design of reinforced concrete and steel constructions and some practical experience. Duties not confined to drawing office. Scope for energetic worker. Apply to the Secretary, 144, Leadenhall Street, London, E.C.3.

RAILWAY SIGNALLING AND COMMUNICATIONS INSTALLATION AND MAINTENANCE. A practical guide, especially intended to help Signal Inspectors, Installers, Fitters, Linesmen, Draughtsmen, and all concerned with installing and maintaining Signal, Telegraph, and Telephone Equipment. 416 pp. Many illustrations. Cloth, 8s. By post 8s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

LONDON TRANSPORT require assistant, Technical Investigation Section, to collate test data and technical information relating to signals and civil engineering work and to assist with civil engineering developments; young graduates seeking first employment considered. Salary within range £245-£560 with additional payments for recognised qualifications; medical exam.; contributory superannuation scheme after probation. Applications within 14 days to Staff Officer (F/EV.202), LONDON TRANSPORT, 55, Broadway, S.W.1. For acknowledgement enclose addressed envelope.

THE appointment of Chief Accountant and Company Secretary is vacant in a large independently owned Departmental Store. Commencing remuneration £1,750 per annum. The appointment is an important one requiring experience and ability and applications therefore are only invited from those, of 40 years of age and under, holding the rank equivalent to that of Deputy Borough Treasurer or Chief Assistant in Local Government Service. For fuller details and for an application form write to the Managing Director, JAMES BEATTIE LIMITED, Victoria Street, Wolverhampton, not later than the 29th February, 1952.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

be tempted to make some at the expense of transport. Higher productivity was the only way out of the difficulties, but the transport industry had to let the Government know that better transport was needed. The toast was proposed by Lt.-Colonel A. O'N. C. Chichester, Mayor of Ballymena. Mr. J. W. Hutton, Chief Traffic Manager, Ulster Transport Authority, and Chairman of the Northern Ireland Section, Institute of Transport, presided.

Institute of Transport, Metropolitan Section.—Mr. J. A. Clarke, General Manager, Ulster Transport Authority, will read a paper on "The Organisation and Progress of the Ulster Transport Authority" before the Institute of Transport, Metropolitan Section, on Monday, March 3. The meeting will be held at 5.30 for 6 p.m. at 80, Portland Place, London, W.1.

Association of Supervising Electrical Engineers.—The Central Regional Council of the Association of Supervising Electrical Engineers is holding its first Electrical Engineers Exhibition at the Royal Horticultural New Hall, Greycoat Street, S.W.1, on Friday and Saturday, March 28 and 29, from 10 a.m. to 7 p.m. Admission will be by ticket, trade card, or any engineering association membership card.

East Indian Railway Company.—The annual general meeting of the East Indian Railway Company was held at the offices of the company, 73-76, King William Street, London, E.C., on January 23, Sir William P. Elderton, Chairman, presiding. For the half year ended September 30, 1951, the deficit on the management account was £1,123. As in past years it has been met out of the separate assets fund, which would also be available to meet the expenses of winding-up after February, 1953. Some £278,424 of new money, with £35,777 in respect of sales of existing investments, or £314,201 in all, became available for investment during the half year. The report was adopted.

Fishguard & Rosslare Railways & Harbours Company.—The net revenue for the half-year ended December 31, 1951, of the Fishguard & Rosslare Railways & Harbours Company, jointly operated by the British Transport Commission and Coras Iompair Éireann, was £39,581, provided under the guarantee of the working undertakings. Of

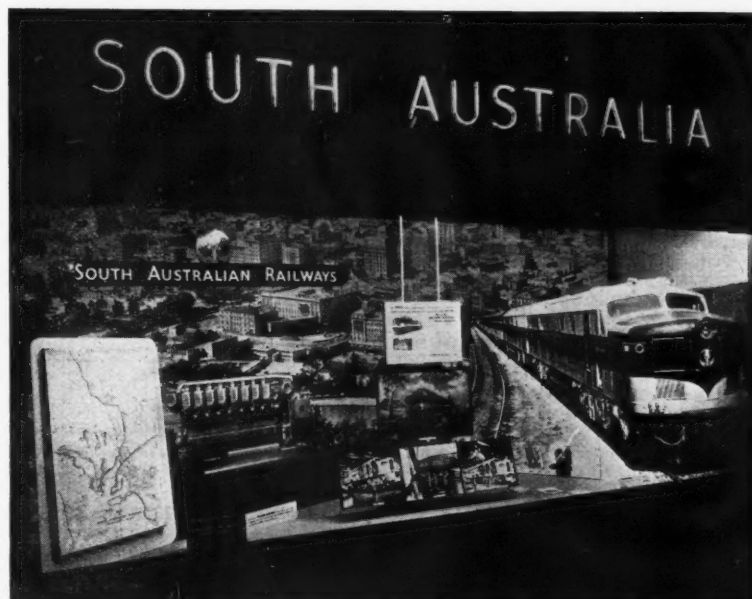
this amount, £13,904 was allocated to interest on debenture stock at 3½ per cent., £21,659 to dividend on new guaranteed 3½ per cent. preference stock, and £3,867 to dividend on new 3½ per cent. preference stock 1914. No dividend is declared on the ordinary shares, as they are held by the parties guaranteeing the interest (the operating companies).

Road Haulage Executive Rates Increase.—After discussions with and careful consideration of representations made by the Traders Co-ordinating Committee on Transport, the Road Haulage Executive has found it necessary to increase its rates by 7½ per cent. to meet heavy increases in

wages and other costs which have taken place in the past eight months. The increase will be applied to general haulage and associated traffic on and from February 24. For parcels and smalls traffic the schedules will be recast to yield an overall average increase of 7½ per cent. and at the same time achieve greater uniformity. The new schedules come into operation on February 24.

Closing of London Midland Branch.—The London Midland Region has announced that the passenger service on the St. Helens Central-Lowton St. Marys branch will be withdrawn on March 3 and the following stations will be closed for passengers,

South Australian Railways in London Window Display



Window display at the offices of the Agent General for South Australia at Marble Arch, London, W., showing (right) main-line diesel-electric locomotive with motive power equipment supplied by the English Electric Co. Ltd.

parcels, and passenger train merchandise : St. Helens Central; Haydock; Ashton-in-Makerfield; and Golborne North. Golborne North will also be closed for freight traffic on March 3. Haydock Park Race-course station will remain in use.

Jonas Woodhead & Sons Ltd.—At the annual general meeting on February 11, of Jonas Woodhead & Sons Ltd., whose results were recorded in our February 1 issue, Mr. Michael Moore, Deputy Chairman, who presided in the absence abroad of the Chairman, Mr. Allan G. Kyle, said that the net profit of the group had increased from £88,753 to £167,778. This was due in part to increased production. After deductions for taxation (£87,221) and other adjustments a profit of £80,296 remained, an increase of £27,398. Payment of a 15 per cent. dividend was recommended. The direct export trade of locomotive and carriage suspensions was well maintained throughout the year, but the tendency in foreign countries to transfer railways from private to State ownership was inclined to disorganise the normal flow of supplies and replacements. The demand for the Woodhead-Monroe shock absorber was increasing rapidly.

Forthcoming Meetings

February 15 (Fri.).—Institute of Transport, Tees-side Section, at the Cleveland Scientific & Technical Institution, Middlesbrough, at 7 p.m. "Rail and Road Transport at High Altitude in Switzerland," by Mr. H. O. Ernst, London Manager, Swiss Federal Railways.

February 19 (Tue.).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society, at the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. "Design and Operation of the Iron & Steel Works at Port Talbot," by Mr. W. F. Cartwright, Director & General Manager, Steel Company of Wales Limited.

February 20 (Wed.).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, S.W.1, at 5.30 p.m. "Recent Developments in Vacuum Brake Equipment," by Mr. G. C. Marsh.

February 20 (Wed.).—Permanent Way Institution, London Section, at the Railway Executive headquarters, 222, Marylebone Road, N.W.1, at 6.30 p.m. Special showing of selected transport films.

February 21 (Thu.).—Diesel Engine Users' Association, at Caxton Hall, Westminster, S.W.1, at 2.30 p.m. Informal discussion on "Operating Problems."

February 23 (Sat.).—Railway Students' Association. Visit to Doncaster and York.

February 25 (Mon.).—London Industrial Co-ordinating Committee of the Royal Society for the Prevention of Accidents. Accident Prevention Conference at Caxton Hall from 10.15 a.m. to 4.30 p.m.

February 26 (Tue.).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas's Street, S.E.1, at 5.45 p.m. Members' Night.

February 26 (Tue.).—Institute of Transport. Informal luncheon at the Connaught Rooms, Great Queen Street, W.C.2, at 12.30 for 1 p.m. Speaker: Mr. Geoffrey Crowther, Editor of *The Economist*.

Railway Stock Market

Quiet has ruled in stock markets, and with buyers cautious and generally tending to await the Budget, prices were inclined to ease. British Funds, however, have been relatively steady after an easier trend, and sentiment in the gilt-edged market was helped by the growing assumption that a further increase in the bank rate is unlikely.

The view is gaining ground that a rally in markets is probable after the Budget, unless that brings unexpected increases in taxation. E.P.T. will hit at increased profits and leave little scope for higher dividends; but many companies will have good prospects of being able to keep dividends at last year's rates, and their shares are now at levels which appear to offer not unattractive yields on this basis.

Higher dividends are not improbable in some cases, where, for example, dividends in recent years have been well below the rate of earnings, and where it may be decided to raise more capital by a public issue of additional ordinary shares after the Budget. At the moment companies in need of additional finance are raising this by share issues confined to shareholders; but after the Budget, when uncertainty as to E.P.T. has been removed, market conditions may be favourable for public issues. There is now a considerable accumulation of money awaiting investment and a favourable trend in general market conditions. In many quarters it is contended that the fall in share values has probably more than discounted E.P.T. If, on the other hand, E.P.T. were more severe than expected, markets would probably go back further. In any case, after the Budget there may be a tendency for increased attention to be given to overseas securities, including foreign rails, unaffected by E.P.T.

Foreign rails have been steady. After the easier tendency recently in evidence, Antofagasta turned firmer with the ordinary at 16½ and the preference 67. United of Havana stocks were inclined to strengthen with the 1906 debentures up to 18½ after news from Cuba that the National Association or Sugar Mill Owners have not abandoned plans for acquiring the railway, and that a committee has been appointed to consider ways and means.

Nitrate Rails were 23s., Taltal 19s. 6d. and San Paulo 10s. units at 14s. 4½d. failed to recover from their recent decline. Brazil Rail bonds were 5½. Manila "A"

debentures have been rather more active around 69 with the preference shares at 6s. 9d.

White Pass Yukon 5 per cent. debentures changed hands around \$30. Canadian Pacific, in line with an easier trend in dollar stocks, have come back to \$67½ at the time of going to press.

Leopoldina ordinary were firm at 11½, with the preference at 28 and 6½ per cent. debentures 149½. After approval of the company's scheme, which the directors have pointed out is the best that can be devised in the circumstances, Leopoldina Terminal 5 per cent. debentures were 108, and the ordinary units quoted at 10½d.

Mexican Central "A" debentures changed hands around 84½. Paraguay Central 6 per cent. debentures changed hands up to 23½. Dorada Railway ordinary stock marked 40½, and Costa Rica 4½. Enmu Bay 4½ per cent. debentures have been dealt in at 56.

Road transport shares became firmer, with Southdown at 93s. 9d., West Riding 39s., Lancashire Transport 61s. 6d., Potteries Motor Traction 40s. 7d., Aldershot & District 79s., and East Kent Road Car 80s. 6d. B.E.T. deferred stock was £390.

In engineering and kindred shares were steadier, as buyers were attracted by the favourable yields and by the belief that though E.P.T. will prevent higher dividends, there will be good prospects of dividends being maintained; and on this basis, yields in many instances are attractive. Babcock & Wilcox firmed up to 67s. 4½d. Thornycroft were 51s. 3d., T. W. Ward 70s. 3d., and Guest Keen 50s. 6d.

Shares of locomotive builders and engineers have again been fairly steady. Vulcan Foundry were 21s. 9d., North British Locomotive 16s., Beyer Peacock 31s. 4½d., Gloucester Wagon 13s. 3d., Wagon Repairs 5s. shares 10s. 6d., while Charles Roberts were firmer at 21s. 3d. Birmingham Carriage were 33s. and Hurst Nelson 55s. 6d.

SCOTTISH REGION STATIONS RENAMED.—The following stations in the Scottish Region have been renamed (the new names appear in parentheses): Dumbarton (Dumbarton Central); Uddington (Uddington Central); Fauldhouse (Fauldhouse North); Pollokshaws (Pollokshaws West); Parkhead (Parkhead Stadium); and Airdrie South (Airdrie).

Traffic Table of Overseas and Foreign Railways

Railway	Miles open	Week ended	Traffics for week		No. of week	Aggregate traffics to date				
			Total this year	Inc. or dec. compared with 1949/50		Total	Increase or decrease			
						1950/51				
Canada	Antofagasta ...	811	1.2.52	£ 153,860	+	£ 46,010	5	£ 679,460	+	£ 176,080
	Costa Rica ...	281	Dec., 1951	c1,313,267	+	c429,807	26	c7,260,673	+	c1,079,944
	Dorada ...	70	Nov., 1951	33,765	—	3,207	48	394,882	—	33,323
	Inter. Ctl. Amer. ...	794	Dec., 1951	\$1,148,425	—	\$55,983	52	\$13,126,431	—	\$339,796
	Paraguay Cent. ...	274	28.12.51	G289,547	—	G102,688	26	G8,823,911	—	G3,556,978
	Peru Corp. ...	1,050	Jan., 1952	88,777,000	+	c\$758,000	30	\$58,048,000	+	\$3,899,000
	„ (Bolivian Section)	66	Jan., 1952	Bs.16,004,000	+	Bs.1,517,000	30	Bs.111,091,000	+	Bs.26,690,000
	Salvador ...	100	Nov., 1951	c140,000	—	c28,000	22	c635,000	—	c112,000
	Taltal ...	147	Jan., 1952	\$2,649,000	+	\$1,043,000	30	\$14,926,000	+	\$4,063,000
	Canadian National†	23,473	Nov., 1951	18,035,000	+	403,000	48	190,178,000	+	22,295,000
Canadian Pacific†	17,037	Dec., 1951	11,865,000	+	591,000	52	142,771,000	+	16,779,000	
Various	Barsi Light* ...	167	Dec., 1951	27,217	+	3,165	38	308,767	+	51,832
	Egyptian Delta ...	607	10.4.51	17,513	—	267	4	17,513	—	267
	Gold Coast ...	536	Dec., 1951	378,543	+	72,605	39	2,473,919	+	208,373
	Mid. of W. Australia ...	277	Nov., 1951	62,093	+	20,023	22	304,756	+	111,372
	South Africa ...	13,398	19.1.52	1,959,342	+	214,175	42	80,114,580	+	8,271,548
	Victoria ...	4,744	Oct., 1951	2,172,730	+	1,149,080	17	—	—	—

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at \$3 to £1